1. 3 External 5.25" Bays
2. Power Button
3. Front I/O: 2 USB 2.0, 1 optional IEEE 1394a, Headphone, Microphone

*Overview*

4. 3 External 5.25" Bays
5. 4-DIMM slots for DDR3 ECC memory
6. 3 Internal 3.5" Bays
7. 320W, 89% efficient Power Supply
8. Dual Core Intel Core i3/i5 Series Processors
   Quad Core Intel 3400 Series Processors
9. Rear I/O: 6 USB 2.0, 1 optional serial port
   PS/2 keyboard/mouse
   1 RJ-45 to Integrated Gigabit LAN
   1 Audio Line In, 1 Audio Line Out, 1 Microphone In
10. 1 PCIe x16 Gen2 Slots
11. 1 PCIe x16 Gen1, 1 PCIe x1 Gen1,1 PCIe x4 Gen1
    3 PCI Slots
12. 5 Internal USB 2.0 ports

| | |
|---|---|
| Form Factor | Convertible Minitower |
| Compatible Operating Systems | Genuine Windows® 7 Ultimate 64-Bit<br>Genuine Windows® 7 Professional 32-Bit<br>Genuine Windows® 7 Professional 64-Bit<br><br>NOTES: Systems may require upgraded and/or separately purchased hardware and/or DVD drive to install the Windows 7 software and take full advantage of Windows 7 functionality. See http://www.microsoft.com/windows/windows-7/ for details.<br><br>Novell SLED 11 Linux Preloaded<br>Red Hat Enterprise Linux WS5 (as Drop-in-the-box only)<br>For detailed OS/hardware support information for Linux, see:<br>http://www.hp.com/support/linux_hardware_matrix |
| Available Processors | Intel® Celeron® processor G1101, 2.26 GHz, 73W, 2 MB cache, 1066 MHz memory, Dual-Core<br>Intel® Pentium® processor G6950, 2.80 GHz, 73W, 3 MB cache, 1066 MHz memory, Dual-Core<br>Intel Core processor i3-540, 3.06 GHz, 73W, 4 MB cache, 1333 MHz memory, Dual-Core, HT<br>Intel Core processor i3-550, 3.20 GHz, 73W, 4 MB cache, 1333 MHz memory, Dual-Core, HT<br>Intel Core processor i3-560, 3.33 GHz, 73W, 4 MB cache, 1333 MHz memory, Dual-Core, HT<br>Intel Core processor i5-650, 3.20 GHz, 73W, 4 MB cache, 1333 MHz memory, Dual-Core, HT, Turbo<br>Intel Core processor i5-660, 3.33 GHz, 4 MB cache, 1333 MHz memory, Dual-Core, HT, Turbo |

*Overview*

| | |
|---|---|
| | Intel Core processor i5-670, 3.46 GHz, 73W, 4 MB cache, 1333 MHz memory, Dual-Core, HT, Turbo<br>Intel Core processor i5-680, 3.60 GHz, 73W, 4 MB cache, 1333 MHz memory, Dual-Core, HT, Turbo<br>Intel Core processor i5-760, 2.80 GHz, 95W, 8 MB cache, 1333 MHz memory, Quad-Core, Turbo<br>Intel Core processor i7-870, 2.93 GHz, 95W, 8 MB cache, 1333 MHz memory, Quad-Core, HT, Turbo<br>Intel Core processor i7-880, 3.06 GHz, 95W, 8 MB cache, 1333 MHz memory, Quad-Core, HT, Turbo<br>Intel Xeon processor X3440, 2.53 GHz, 95W, 8 MB cache, 1333 MHz memory, Quad-Core, HT, Turbo<br>Intel Xeon processor X3450, 2.66 GHz, 95W, 8 MB cache, 1333 MHz memory, Quad-Core, HT, Turbo<br>Intel Xeon processor X3470, 2.93 GHz, 95W, 8 MB cache, 1333 MHz memory, Quad-Core, HT, Turbo<br>Intel Xeon processor X3480, 3.06 GHz, 95W, 8 MB cache, 1333 MHz memory, Quad-Core, HT, Turbo |
| Available Processor Disclaimers | Integrated Intel HD graphics is not supported on the Quad-Core Intel Core i5-700 Desktop Processor Series, Intel Core i7-800 Desktop Processor Series or Intel Xeon Processor 3400 Series.<br><br>Intel's numbering is not a measurement of higher performance. Processor numbers differentiate features within each processor family, not across different processor families. See: http://www.intel.com/products/processor_number/ for details.<br><br>64-bit computing on Intel® 64 architecture requires a computer system with a processor, chipset, BIOS, operating system, device drivers and applications enabled for Intel 64 architecture. Processor will not operate (including 32-bit operation) without an Intel 64 architecture-enabled BIOS. Performance will vary depending on your hardware and software configurations. See: http://www.intel.com/info/em64t for more information.<br><br>Dual-Core and Quad-Core technologies are designed to improve performance of multithreaded software products and hardware-aware multitasking operating systems and may require appropriate operating system software for full benefits; check with software provider to determine suitability; Not all customers or software applications will necessarily benefit from use of these technologies. |
| Color | Jack Black |
| Convertibility | Yes. 5.25" drives rotate for Minitower or Desktop orientation. |
| Expansion Slots (see system board section for more details) | • 1 PCI Express Gen1 slot x1 mechanical/x1 electrical<br>• 1 PCI Express Gen2 slots x16 mechanical/ x16 electrical (used for discrete graphics)<br>• 1 PCI Express Gen1 slot x4 mechanical/x1 electrical<br>• 1 PCI Express Gen1 slot x16 mechanical/x4 electrical<br>• 3 PCI slots (full-height, full-length) |
| Expansion Bays (see storage section for more details) | • 3 internal 3.5" bays<br>• 3 external 5.25" bays<br><br>NOTE: Third external 5.25" bay is not full depth; maximum depth 170 mm (6.7 inches) |
| Front I/O | 2 USB 2.0, 1 IEEE 1394 (requires optional PCI card to function), 1 audio out, and 1 microphone. |
| Internal I/O | 5 USB 2.0 ports available by two separate 2x5 and one 1x5 header:<br>supports one HP Internal USB Port Kits, (one port on each Kit) for 1x5 pin header plus<br>(a) up to two USB Media Card Readers, or (b) one Internal Port kit and one USB Media Card Reader. |
| Rear I/O | 1 DVI-I Single Link and 1 DisplayPort output from Intel HD graphics (available on dual-core processors only),<br>6 USB 2.0, 1 optional serial port, 2 PS/2, RJ-45 (NIC), 1 audio line in, 1 audio line out, 1 microphone in; audio ports can be retasked to function as line in, line out, microphone, or headphone |
| Interfaces Supported | 22-in-1 Media Card Reader (optional) |
| Chassis Dimensions (W x D x H) | Standard minitower orientation: 17.78 x 45.43 x 44.76 cm (7 x 17.9 x 17.6 in)<br>Converted desktop orientation: 17.78 x 45.43 x 44.76 cm (7 x 17.9 x 17.6 in) |

*Overview*

| | | |
|---|---|---|
| **Weight** | Exact weights depend upon configuration<br>Minimum: 10.7 kg (23.6 lbs)<br>Standard: 11.8 kg (26.0 lbs)<br>Maximum: 14 kg (30.8 lbs) | |
| **Temperature** | Operating: | 40° to 95°F (5° to 35°C) |
| | Non-operating | -40° to 140°F (-40° to 60°C) |
| **Humidity** | Operating: | 8% to 85% |
| | Non-operating | 8% to 90% |
| **Maximum Altitude** (non-pressurized) | Operating: | 3,000 m; 10,000 ft |
| | Non-operating | 9,100 m; 30,000 ft |
| **Power Supply** | 320 watts wide-ranging, active Power Factor Correction, 89% Efficient (http://www.80plus.org/manu/psu/psu_detail.aspx?id=41&type=2)<br><br>The Power Supply Efficency Report for this Power Supply may be found at the following link: http://www.80plus.org/manu/psu/psu_reports/HEWLETT%20PACKARD_DPS-320KB-1%20A_ECOS%201557.1_320W_Report.pdf | |
| **Backup Devices** | For a complete listing of compatible DAT tape drives, LTO tape drives and RDX Removable Disk Backup System offerings, please visit: http://www.hp.com/go/connect | |

Processors

| | Factory Configured | Option Kit | Option Kit Part Number | Support Notes |
|---|---|---|---|---|
| **Dual-Core Intel® "Clarkdale" Processors for Z200** | | | | |
| Intel® Celeron® Processor G1101 2.26 GHz, 2MB cache, 1066 MHz memory, Dual-Core | Y | N | | Not Supported on Non ECC type memory modules. |
| Intel® Pentium® Processor G6950 2.8 GHz, 3MB cache, 1066 MHz memory, Dual-Core | Y | N | | |
| Intel Core Processor i3-540 3.06 GHz, 4MB cache, 1333 MHz memory, Dual-Core, HT | Y | N | | |
| Intel Core Processor i3-550 3.20 GHz, 4MB cache, 1333 MHz memory, Dual-Core, HT | Y | N | | |
| Intel Core Processor i3-560 3.33 GHz, 4MB cache, 1333 MHz memory, Dual-Core, HT | Y | N | | |
| Intel Core Processor i5-650 3.20 GHz, 4MB cache, 1333 MHz memory, Dual-Core, HT, Turbo | Y | N | | |
| Intel Core Processor i5-660 3.33 GHz, 4MB cache, 1333 MHz memory, Dual-Core, HT, Turbo | Y | N | | |
| Intel Core Processor i5-670 3.46 GHz, 4MB cache, 1333 MHz memory, Dual-Core, HT, Turbo | Y | N | | |
| Intel Core Processor i5-680 3.60 GHz, 4MB cache, 1333 MHz memory, Dual-Core, HT, Turbo | Y | N | | |
| **Quad-Core Intel® Core™ i5-700 and Core i7-800 Desktop Processor Series** | | | | |
| Intel Core Processor i5-750 2.66 GHz, 8 MB cache, 1333 MHz memory, Quad-Core, Turbo | Y | N | | |
| Intel Core Processor i5-760 2.80 GHz, 8 MB cache, 1333 MHz memory, Quad-Core, Turbo | Y | N | | |
| Intel Core Processor i7-870 2.93 GHz, 8 MB cache, 1333 MHz memory, Quad-Core, HT, Turbo | Y | N | | |
| Intel Core Processor i7-880 3.06 GHz, 8 MB cache, 1333 MHz memory, Quad-Core, HT, Turbo | Y | N | | |
| **Quad-Core Intel® Xeon® Processor 3400 Series with Intel® Nehalem Architecture** | | | | |
| Intel Xeon Processor X3430 2.40 GHz, 8MB cache, 1333 MHz memory, Quad-Core, Turbo | Y | N | | |
| Intel Xeon Processor X3440 2.53 GHz, 8MB cache, 1333 MHz memory, Quad-Core, HT, Turbo | Y | N | | |
| Intel Xeon Processor X3450 2.66 GHz, 8MB cache, 1333 MHz memory, Quad-Core, HT, Turbo | Y | N | | |
| Intel Xeon Processor X3460 2.80 GHz, 8MB cache, 1333 MHz memory, Quad-Core, HT, Turbo | Y | N | | |
| Intel Xeon Processor X3470 2.93 GHz, 8MB cache, 1333 MHz memory, Quad-Core, HT, Turbo | Y | N | | |

| | | | | | |
|---|---|---|---|---|---|
| | Intel Xeon Processor X3480 3.06 GHz, 8MB cache, 1333 MHz memory, Quad-Core, HT, Turbo | Y | N | | |
| | Integrated Intel HD graphics is supported only on Dual-Core Intel® "Clarkdale" Processors; it is not supported on the Quad-Core Intel Core i5-700 Desktop Processor Series, Intel Core i7-800 Desktop Processor Series or Intel Xeon Processor 3400 Series. | | | | |

| SATA Hard Drives | | Factory Configured | Option Kit | Option Kit Part Number | Support Notes |
|---|---|---|---|---|---|
| | **SATA (Serial ATA) Hard Drives for HP Workstations** | | | | |
| | 160GB SATA 7200 rpm 3Gb/s 3.5" HDD | Y | Y | PV944A | |
| | 250GB SATA 7200 rpm 3Gb/s 3.5" HDD (for HP Z-Workstations) | Y | Y | PY278AA | |
| | 320GB SATA 7200 rpm 3Gb/s 3.5" HDD | Y | Y | FH963AA | |
| | 500GB SATA 7200 rpm 3Gb/s 3.5" HDD | Y | Y | PV943A | |
| | 1000GB (1TB) SATA 7200 rpm 3.0Gb/s 3.5" HDD | Y | Y | GE262AA | |
| | 1.5TB SATA 7200 rpm 3Gb/s 3.5" HDD | Y | Y | VH997AA | |
| | 160GB SATA 10K rpm SFF in 3.5" Frame HDD | Y | Y | EW222AA | |
| | 300GB SATA 10K rpm SFF in 3.5" Frame HDD | Y | Y | FM802AA | |
| SATA Solid State Drives | **HP Solid State Drives for Workstations** | | | | |
| | HP 160GB SATA X25-M SSD | Y | Y | WV915AA | |

| Hard Drive Controllers | | Factory Configured | Option Kit | Option Kit Part Number | Support Notes |
|---|---|---|---|---|---|
| | **Integrated SATA 3.0 Gb/s Controller (Z200)** | | | | |
| | Integrated SATA 3.0 Gb/s Controller, RAID 0, 1, 5 supported | Y | N | | |
| | **Factory integrated RAID on motherboard for SATA drives** | | | | |
| | RAID 0 Data Configuration -- Boot/OS Drive + 2 Drive Striped Array | Y | N | | |
| | RAID 0 Configuration - Striped Array | Y | N | | |
| | RAID 1 Configuration - Mirrored Array | Y | N | | |
| | SATA hardware RAID is not supported on Linux systems. The Linux kernel, with built-in software RAID, provides excellent functionality and performance. It is a good alternative to hardware-based RAID. Please visit: http://h20000.www2.hp.com/bc/docs/support/SupportManual/c00060684/c00060684.pdf for RAID capabilities with Linux.<br>All drives must be identical in type and capacity<br>All RAID arrays must be less than 2 TB<br>NOTE 1: Requires identical hard drives (speeds, capacity, interface). | | | | |

*Supported Components*

| Integrated Graphics | Factory Configured | Option Kit | Option Kit Part Number | Support Notes | Supported Multi Mixed |
|---|---|---|---|---|---|
| Intel® HD Graphics (integrated) | Y | N | | Available with dual-core processors only, the Integrated Graphics is turned off if a discrete graphics adapter is installed. | 1 |
| **Professional 2D** | | | | | |
| NVIDIA Quadro NVS 295 256MB PCIe Graphics Card | Y | Y | FY943AA | | 2 X |
| **Entry 3D** | | | | | |
| ATI FirePro V3700 256MB PCIe Graphics Card | Y | Y | FY944AA | | 1 |
| NVIDIA Quadro FX 380 256MB PCIeGraphics Card | Y | Y | NB769AA | | 1 |
| ATI FirePro V3800 512MB PCIe Graphics Card | Y | Y | WL048AA | | 1 |
| NVIDIA Quadro FX 580 512MB PCIe Graphics Card | Y | Y | FY945AA | | 1 |
| ATI FirePro V4800 1GB Graphics Card | Y | Y | WL049AA | | 1 |
| NVIDIA Quadro 600 1GB Graphics Card | Y | Y | WS093AA | | 1 |
| **Mid-range 3D** | | | | | |
| ATI FirePro V5700 512MB PCIe Graphics Card | Y | Y | FY947AA | | 1 |
| ATI FirePro V5800 1GB Graphics Card | Y | Y | WL050AA | | 1 |
| NVIDIA Quadro FX 1800 768MB PCIe Graphics Card | Y | Y | FY946AA | | 1 |
| NVIDIA Quadro 2000 1GB Graphics Card | Y | Y | WS094AA | | 1 |

*Supported Components*

| Memory | CTO | Option Kit Part Number | Support Notes |
|---|---|---|---|
| | **PC3-10600 DDR3-1333 ECC Unbuffered DIMMs CTO** | | |
| | 2GB (2x1GB) DDR3-1333 ECC Unbuffered RAM 1-CPU | | |
| | 3GB (3x1GB) DDR3-1333 ECC Unbuffered RAM 1-CPU | | |
| | 4GB (2x2GB) DDR3-1333 ECC Unbuffered RAM 1-CPU | | |
| | 8GB (4x2GB) DDR3-1333 ECC Unbuffered RAM 1-CPU | | |
| | 8GB (2x4GB) DDR3-1333 ECC Unbuffered RAM 1-CPU | | |
| | 16GB (4x4GB) DDR3-1333 ECC Unbuffered RAM 1-CPU | | |
| | **PC3-10600 DDR3-1333 nECC Unbuffered DIMMs CTO** | | |
| | 1 GB (1x1GB) DDR3-1333 nECC Unbuffered RAM 1-CPU | | |
| | 2 GB (2x1GB) DDR3-1333 nECC Unbuffered RAM 1-CPU | | |
| | 4 GB (2x2GB) DDR3-1333 nECC Unbuffered RAM 1-CPU | | |
| | 8 GB (4x2GB) DDR3-1333 nECC Unbuffered RAM 1-CPU | | |
| | Sub-Section Description/Notes | | |
| | Each processor supports up to 2 channels of DDR3 memory. To realize full performance at least 1 DIMM must be inserted into each channel. | | |
| | The CPUs determine the speed at which the memory is clocked. If a 1333MHz capable CPU is used in the system, the maximum speed the memory will run at is 1333MHz regardless of the specified speed of the memory | | |
| | AMO | | |
| | **PC3-10600 DDR3-1333 nECC Unbuffered DIMMs AMO** | | |
| | HP 1GB DDR3-1333 non-ECC UDIMM | XC497AA | |
| | HP 2GB DDR3-1333 non-ECC UDIMM | XC440AA | |
| | **PC3-10600 DDR3-1333 ECC Unbuffered DIMMs AMO** | | |
| | 1GB (1x1GB) DDR3-1333 ECC Unbuffered RAM | FX698AA | |
| | 2GB (1x2GB) DDR3-1333 ECC Unbuffered RAM | FX699AA | |
| | 4GB (1x4GB) DDR3-1333 ECC Unbuffered RAM | NL797AA | |
| | NOTE: Only unbuffered DDR3 DIMMs are supported. | | |

| Multimedia and Audio Devices | | Factory Configured | Option Kit | Option Kit Part Number | Support Notes |
|---|---|---|---|---|---|
| | HP Thin USB Powered Speakers | Y | Y | KK912AA | |
| | Integrated Intel/Realtek HD ALC262 Audio | Y | N | | |
| | Creative X-Fi Titanium PCIe Audio Card | Y | Y | NH222AA | |
| | NOTE 1: The SoundBlaster X-Fi Titanium audio card is supported on the HP Z Series Workstations with Microsoft Windows XP Pro 32-bit and 64-bit and Microsoft Vista Home Basic 32-bit and Microsoft Windows 7 32-bit and 64-bit versions.<br>Linux is not supported. | | | | |

*Supported Components*

**Optical and Removable Storage**

| | Factory Configured | Option Kit | Option Kit Part Number | Support Notes |
|---|---|---|---|---|
| HP 16X DVD-ROM SATA Drive | Y | Y | EW268AA | See note 1 |
| HP 16X DVD+-RW SuperMulti SATA Drive | Y | Y | EW269AA | |
| HP 22-in-1 Media Card Reader Kit (Workstations) | Y | Y | NK361AA | |
| HP Blu-ray Writer | Y | Y | AR482AA | |

Actual speeds may vary. Does not permit copying of commercially available DVD movies or other copyright protected materials. Intended for creation and storage of your original material and other lawful uses. Double Layer discs can store more data than single layer discs. However, double-layer discs burned with this drive may not be compatible with many existing single-layer DVD drives and players. As Blu-ray is a new format containing new technologies, certain disc, digital connection, compatibility and/or performance issues may arise, and do not constitute defects in the product. Flawless playback on all systems is not guaranteed. In order for some Blu-ray titles to play, they may require a DVI or HDMI digital connection and your display may require HDCP support. HD-DVD movies cannot be played on this workstation.

NOTE 1: Not supported as a 2nd drive option.

**Controller Cards**

| | Factory Configured | Option Kit | Option Kit Part Number | Support Notes |
|---|---|---|---|---|
| HP FireWire/IEEE 1394a PCI Card | Y | Y | PA997A | |

**Monitors**

| | Factory Configured | Option Kit | Option Kit Part Number | Support Notes |
|---|---|---|---|---|
| HP LP2065 20-inch LCD Monitor | Y | Y | EF227A4 | |
| HP LP2475w 24-inch Widescreen LCD Monitor | Y | Y | KD911A4 | |
| HP DreamColor LP2480zx Professional Display | Y | Y | GV546A4 | |
| HP LP3065 30-inch Widescreen LCD Monitor | Y | Y | EZ320A4 | |
| HP ZR22w 21.5-inch S-IPS LCD Monitor | Y | Y | VM626A4 | |
| HP ZR24w 24-inch S-IPS LCD Monitor | Y | Y | VM633A4 | |
| HP ZR30w 30-inch S-IPS LCD Monitor | Y | Y | VM617A4 | |

Supported by all Operating Systems available from HP

Screen Size Diagonally Measured

*Supported Components*

| Networking and Communications | Factory Configured | Option Kit | Option Kit Part Number | Support Notes |
|---|---|---|---|---|
| Broadcom NetXtreme Gigabit Ethernet Plus NIC (PCIe) | Y | Y | FS215AA | This is a PCI Express card based on the Broadcom 5761 chip. |
| Intel Gigabit CT Desktop NIC | Y | Y | FH969AA | |
| Integrated Intel 82578DM PCIe LoM Controller | Y | N | | |

NOTE 1: "Gigabit" Ethernet indicates compliance with IEEE standard 802.3ab for Gigabit Ethernet, and does not connote actual operating speed of 1 Gb/sec. For high speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.
The Broadcom (5761) NetXtreme Gigabit Ethernet Plus NIC and the Intel Gigabit CT NIC are supported on the following operating systems:
Microsoft Windows XP Pro 32-bit and 64-bit and Microsoft Vista Home Basic 32-bit and Microsoft Windows 7 32-bit and 64-bit versions.
Red Hat Enterprise Linux(RHEL), 5 Desktop/Workstation
Novell SLED 10 & 11

| Racking and Physical Security | Factory Configured | Option Kit | Option Kit Part Number | Support Notes |
|---|---|---|---|---|
| Security Cable with Kensington Lock | N | Y | PC766A | |
| HP Solenoid Hood Lock & Hood Sensor | Y | Y | DE618A | |

| Input Devices | Factory Configured | Option Kit | Option Kit Part Number | Support Notes |
|---|---|---|---|---|
| HP USB Laser Mouse | Y | Y | GW405AA | |
| HP SpacePilot 3D USB Intelligent Controller | N | Y | EF390AA | |
| HP SpaceExplorer 3D USB Controller | N | Y | RY429AA | |
| HP USB 2-Button Optical Scroll Mouse | Y | Y | DC172B | |
| HP USB Standard Keyboard | Y | Y | DT528A | |
| HP PS/2 Optical Scroll Mouse | Y | Y | EY703AA | |
| HP PS/2 Standard Keyboard | Y | Y | DT527A | |
| HP USB Optical 3-Button Mouse | Y | Y | DY651A | |
| HP USB Smart Card Keyboard | N | Y | ED707AA | |
| HP 2.4GHz Wireless Keyboard & Mouse | N | Y | NB896AA | |
| HP USB CCID SmartCard Keyboard | Y | Y | BV813AA | |

*Supported Components*

Other Hardware

| | Factory Configured | Option Kit | Option Kit Part Number | Support Notes |
|---|---|---|---|---|
| HP Power Cord Kit | N | Y | DM293A | |
| HP eSATA PCI Cable Kit | Y | Y | GM110AA | |
| HP Workstation Mouse Pad | Y | N | | Japan only |
| Configure minitower in desktop orientation | Y | N | | |
| HP Serial Port Adapter | N | Y | PA716A | |
| HP Internal USB Port Kit | N | Y | EM165AA | |
| HP ENERGY STAR 5.0 Enabled Configuration | Y | N | | |
| HP Parallel Port Adapter Kit | N | Y | KD061AA | |
| HP Z4 Fan and Front Card Guide Kit | N | Y | VH190AA | |

The HP Z4 Fan and Front Card Guide Kit is compatible with the Z200 as well. Please note that, when this kit is used with custom expansion cards or cards with special cooling requirements, the overall power budget of the configured system must be taken into account.

Software

| | Factory Configured | Option Kit | Option Kit Part Number | Support Notes |
|---|---|---|---|---|
| Intervideo WinDVD with DVD player | Y | N | | |
| MS Office Home & Business 2010 | Y | N | | |
| PDF Complete - Trial Edition | Y | N | | |
| Roxio Easy Media Creator (CD or DVD burner) | Y | N | | |
| HP Client Manager Software v6.2 (optional download) | Y | N | | |
| Elemental Accelerator for NVIDIA Quadro | Y | Y | VH158AA | Support FX1800 only |
| HP Support Assistant | Y | N | | |
| HP Performance Advisor | N | Y | | Available as a web download/install starting 1/7/2010. Included in the Windows 7 preload starting 3/1/2010. |
| HP Power Assistant | Y | N | | |

*Supported Components*

| Operating Systems | Support Notes |
|---|---|
| HP Linux Installer Kit | See: http://www.hp.com/workstations/software/linux |
| Genuine Windows® 7 Professional 32-bit | See: http://www.microsoft.com/windows/windows-7/ for support details. |
| Red Hat Linux Workstation 5 Drop In Box OS | |
| Genuine Windows® 7 Professional 32-bit with downgrade to Windows® XP Professional 32-bit custom installed | See: http://www.microsoft.com/windows/windows-7/ for support details. |
| Genuine Windows® 7 Professional 64-bit | See: http://www.microsoft.com/windows/windows-7/ for support details. |
| Novell SLED 11 Linux | Preload |
| Genuine Windows® 7 Professional 64-bit with downgrade to Windows® XP Professional x64 custom installed | See: http://www.microsoft.com/windows/windows-7/ for support details. |

| System Board | |
|---|---|
| System Board Form Factor | ATX 251.46 x 304.8 mm (9.9 x 12 inches) |
| Processor Socket | Single LGA 1156 |
| CPU Bus Speed | DMI |
| Chipset | Intel® PCH 3450 |
| Super I/O Controller | SMSC SCH5327, Rev B |
| Memory Expansion Slots | 4 DDR3 memory slots |
| Memory Type Supported | DDR3, UDIMM (Unbuffered), ECC& nECC |
| Memory Modes | Channel non-Interleaved |
| Memory Speed Supported | 1333MHz DDR3 |
| Memory Protection | ECC available on data, parity on address and command |
| Memory | |
| Maximum Memory | 16GB |

| | CPU0 | | | |
|---|---|---|---|---|
| Capacity | DIMM1 | DIMM2 | DIMM3 | DIMM4 |
| 1GB | 1GB | | | |
| 2GB | 1GB | | 1GB | |
| 3GB | 1GB | 1GB | 1GB | |
| 4GB | 2GB | | 2GB | |
| 8GB | 2GB | 2GB | 2GB | 2GB |
| 8GB | 4GB | | 4GB | |
| 16GB | 4GB | 4GB | 4GB | 4GB |

| | | |
|---|---|---|
| Memory Configuration (Supported) | ECC DIMMs are supported, and support nEcc 1GBx1 configuration on Z200 | |
| PCI Express Connectors | 1 PCI Express Gen2 slots x16 mechanical/ x16 electrical (used for discrete graphics)<br>1 PCI Express Gen1 slot x16 mechanical/x4 electrical<br>1 PCI Express Gen1 slot x4 mechanical/x1 electrical<br>1 PCI Express Gen1 slot x1 mechanical/x1 electrical | |
| PCI Connectors (5.0V) | 3 PCI | |
| Interfaces Supported | SATA | Integrated 6-channel SATA 3.0Gb/sec controller with RAID 0, 1, 5 and NCQ. (Factory integrated RAID is Microsoft Windows only) RAID 5 is supported by Software XOR. |
| Serial Attached SCSI | None | |
| Integrated RAID | NOTE: Requires identical hard drives (speeds, capacity, interface) | |
| Integrated Graphics | Integrated Intel HD Graphics (available with dual-core processors only)<br>UMA architecture (graphics frame buffer): with Unified Memory Architecture, a region of system memory is reserved and dedicated to the graphics display;<br>DirectX 10.0 compliant;<br>1 Single-link DVI-I + 1 DP graphics ports integrated in motherboard;<br>Supports dual display across DP & DVI-I | |

*System Technical Specifications*

| | | |
|---|---|---|
| Network Controller | Integrated Gbit LAN MAC by Intel PHY Hanksville 82578DM. Management capabilities WOL, PXE 2.1 and AMT 6.0 | |
| External SATA (eSATA) | 1 port at SATA5 eSATA capable with optional eSATA After-Market Option cable kit. | |
| IDE connector | No | |
| Floppy connector | No | |
| Network Controller | Management capabilities WOL, PXE 2.1 and ASF 2.0 | |
| Serial | 1 internal header (requires optional Serial Port Adaptor) | |
| 2nd Serial | No | |
| Parallel | 1 internal header (optional parallel port adaptor required) | |
| HD Integrated Audio | High Definition Integrated Realtek ALC262 Audio with Line in, Line Out, Microphone, Headphone | |
| CD-ROM input/Audio | No | |
| AUX INPUT; Audio | No | |
| IEEE 1394 Connector(s) | Front | 1 IEEE 1394a (requires optional PCI card to function) |
| | Rear | No |
| | Internal | No |
| USB Connector(s) | Front | 2 USB 2.0 |
| | Rear | 6 USB 2.0 |
| | Internal | 5 USB 2.0 ports available by two separate 2x5 and one 1x5 header:<br>supports one HP Internal USB Port Kits, (one port on each Kit) for 1x5 pin header plus<br>(a) up to two USB Media Card Readers, or (b) one Internal Port kit and one USB Media Card Reader. |
| Flash ROM | Yes | |
| Clear Fan Header | Yes | |
| CPU Fan Header | Yes | |
| Chassis Fan Header | 1 Rear System Chassis Fan Header, 1 Optional Front Chassis Fan Header | |
| Front PCI Fan Header | Yes | |
| Front Control Panel/Speaker Header | Yes | |
| CMOS Battery Holder - Lithium | Yes | |
| Integrated Trusted Platform Module | Integrated TPM 1.2 | |
| Power Supply Headers | Yes | |
| Power Switch, Power LED & Hard Drive LED Header | Yes | |
| Clear Password Jumper | Yes | |
| Keyboard/Mouse | USB or PS/2 | |
| Power Supply | 320w Wide Ranging, Active PFC, 89% Efficient | |
| Operating Voltage Range | 90-264 VAC | |
| Rated Voltage Range | 100-240 VAC | |
| Rated Line Frequency | 50/60 Hz | |

*System Technical Specifications*

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|---|---|
| Operating Line Frequency Range | 47-63 Hz |
| Rated Input Current | 5.5A @100-240V |
| Heat Dissipation | Typical: 728 btu/hr<br>Maximum: 1255 BTU/hr (316.3 kg-cal/hr) |
| Power Supply Fan | 92x25 mm variable speed |
| ENERGY STAR® qualified (Config Dependent) | Yes |
| 80 PLUS Compliant | Yes, 89% Efficient |
| FEMP Standby Power Compliant 115V (Wake-on LAN disabled) (<2W in S5 - Power Off) | Yes |
| Power consumption in sleep mode (as defined by ENERGY STAR) - Suspend to RAM (S3) | <5W |
| Built-in Self Test (BIST) LED | No |
| Surge Tolerant Full Ranging Power Supply (withstands power surges up to 2000V) | Yes |
| Hood Lock Header | Yes |

Energy Consumption

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Example Configuration #1* | *Processor Info*<br>Memory Info<br>Graphics Info<br>Disks/Optical/Floppy<br>PSU<br>OS/BIOS | 1x X3430 2.40 GHz<br>2x 1GB 1333 MHz DDR3<br>1x FX380<br>1x SATA 250 GB 7.2k rpm / 1x Optical / 0x Floppy<br>320w<br>Win7 32 / v1.03 | | | | | |
| Energy Consumption | | 115 VAC | | 230 VAC | | 100 VAC | |
| | | LAN Enabled | LAN Disabled | LAN Enabled | LAN Disabled | LAN Enabled | LAN Disabled |
| | Windows Idle (S0) | 40.31 W | | 41.34 W | | 40.32 W | |
| | Windows Busy Typ (S0) | 159.09 W | | 156.30 W | | 159.24 W | |
| | Windows Busy Max (S0) | 173.21 W | | 169.04 W | | 174.06 W | |
| | Sleep (S0) | 3.79 W | 3.71 W | 4.00 W | 3.94 W | 3.79 W | 3.72 W |
| | Off (S0) | 1.26 W | 1.18 W | 1.44 W | 1.37 W | 1.24 W | 1.27 W |
| | Zero Power Mode (EuP) | 0.21 W | | 0.39 W | | 0.20 W | |
| Heat Dissipation** | | 115 VAC | | 230 VAC | | 100 VAC | |
| | | LAN Enabled | LAN Disabled | LAN Enabled | LAN Disabled | LAN Enabled | LAN Disabled |
| | Windows Idle (S0) | 137.58 btu/hr | | 141.09 btu/hr | | 137.61 btu/hr | |
| | Windows Busy Typ (S0) | 542.97 btu/hr | | 533.45 btu/hr | | 543.49 btu/hr | |
| | Windows Busy Max (S0) | 591.17 btu/hr | | 576.93 btu/hr | | 594.07 btu/hr | |
| | Sleep (S0) | 12.9 btu/hr | 12.7 btu/hr | 13.7 btu/hr | 13.5 btu/hr | 12.9 btu/hr | 12.7 btu/hr |
| | Off (S0) | 4.30 btu/hr | 4.03 btu/hr | 4.91 btu/hr | 4.68 btu/hr | 4.23 btu/hr | 4.33 btu/hr |

| | | | | |
|---|---|---|---|---|
| | Zero Power Mode (EuP) | 0.72 btu/hr | 1.33 btu/hr | 0.68 btu/hr |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Example Configuration #2* | *Processor Info*<br>Memory Info<br>Graphics Info<br>Disks/Optical/Floppy<br>PSU<br>OS/BIOS | 1x X3450 2.66 GHz 1333 MHz<br>3x 1GB 1333 MHz DDR3<br>1x FX580<br>1x SATA 500 GB 7.2k rpm / 1x Optical / 0x Floppy<br>320w<br>Win7 32 / v1.03 | | | | | |
| Energy Consumption | | 115 VAC | | 230 VAC | | 100 VAC | |
| | | LAN Enabled | LAN Disabled | LAN Enabled | LAN Disabled | LAN Enabled | LAN Disabled |
| | Windows Idle (S0) | 40.16 W | | 42.36 W | | 39.71 W | |
| | Windows Busy Typ (S0) | 180.73 W | | 178.99 W | | 181.11 W | |
| | Windows Busy Max (S0) | 202.85 W | | 200.25 W | | 204.01 W | |
| | Sleep (S0) | 3.78 W | 3.73 W | 4.01 W | 3.94 W | 3.79 W | 3.72 W |
| | Off (S0) | 1.25 W | 1.17 W | 1.43 W | 1.36 W | 1.23 W | 1.17 W |
| | Zero Power Mode (EuP) | 0.21 W | | 0.39 W | | 0.20 W | |
| Heat Dissipation** | | 115 VAC | | 230 VAC | | 100 VAC | |
| | | LAN Enabled | LAN Disabled | LAN Enabled | LAN Disabled | LAN Enabled | LAN Disabled |
| | Windows Idle (S0) | 137.07 btu/hr | | 144.57 btu/hr | | 135.53 btu/hr | |
| | Windows Busy Typ (S0) | 616.83 btu/hr | | 610.89 btu/hr | | 618.13 btu/hr | |
| | Windows Busy Max (S0) | 692.33 btu/hr | | 683.45 btu/hr | | 696.29 btu/hr | |
| | Sleep (S0) | 12.9 btu/hr | 12.7 btu/hr | 13.7 btu/hr | 13.5 btu/hr | 12.9 btu/hr | 12.7 btu/hr |
| | Off (S0) | 4.27 btu/hr | 3.99 btu/hr | 4.88 btu/hr | 4.64 btu/hr | 4.2 btu/hr | 3.99 btu/hr |
| | Zero Power Mode (EuP) | 0.72 btu/hr | | 1.33 btu/hr | | 0.68 btu/hr | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Example Configuration #3* | *Processor Info*<br>Memory Info<br>Graphics Info<br>Disks/Optical/Floppy<br>PSU<br>OS/BIOS | 1x X3470 2.93 GHz 1333 MHz<br>4x 1GB 1333 MHz DDR3<br>1x FX1800<br>1x SATA 1.0 TB 7.2k rpm / 1x Optical / 0x Floppy<br>320w<br>Win7 64 / v1.03 | | | | | |
| Energy Consumption | | 115 VAC | | 230 VAC | | 100 VAC | |
| | | LAN Enabled | LAN Disabled | LAN Enabled | LAN Disabled | LAN Enabled | LAN Disabled |
| | Windows Idle (S0) | 41.33 W | | 42.14 W | | 41.61 W | |
| | Windows Busy Typ (S0) | 188.72 W | | 182.86 W | | 188.51 W | |
| | Windows Busy Max (S0) | 263.88 W | | 238.62 W | | 260.85 W | |
| | Sleep (S0) | 3.98 W | 3.92 W | 4.20 W | 4.15 W | 3.98 W | 3.92 W |
| | Off (S0) | 1.26 W | 1.18 W | 1.44 W | 1.37 W | 1.24 W | 1.17 W |
| | Zero Power Mode (EuP) | 0.21 W | | 0.39 W | | 0.20 W | |
| Heat Dissipation** | | 115 VAC | | 230 VAC | | 100 VAC | |
| | | LAN Enabled | LAN Disabled | LAN Enabled | LAN Disabled | LAN Enabled | LAN Disabled |
| | Windows Idle (S0) | 140.6 btu/hr | | 143.82 btu/hr | | 142.01 btu/hr | |
| | Windows Busy Typ (S0) | 644.10 btu/hr | | 624.10 btu/hr | | 643.38 btu/hr | |
| | Windows Busy Max (S0) | 900.62 btu/hr | | 814.41 btu/hr | | 890.28 btu/hr | |
| | Sleep (S0) | 13.6 btu/hr | 13.4 btu/hr | 14.3 btu/hr | 14.2 btu/hr | 13.6 btu/hr | 13.4 btu/hr |
| | Off (S0) | 4.30 btu/hr | 4.03 btu/hr | 4.91 btu/hr | 4.68 btu/hr | 4.23 btu/hr | 3.99 btu/hr |
| | Zero Power Mode (EuP) | 0.72 btu/hr | | 1.33 btu/hr | | 0.68 btu/hr | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Example Configuration #4 (ENERGY STAR Qualified)* | *Processor Info*<br>Memory Info<br>Graphics Info<br>Disks/Optical/Floppy<br>PSU<br>OS/BIOS | 1x X3470 2.93 GHz 1333 MHz<br>4x 4GB 1333 MHz DDR3<br>1x FX1800<br>1x SATA 1.0 TB 7.2k rpm / 1x Optical / 0x Floppy<br>320w<br>Win7 64 / v1.03 | | | | | |
| Energy Consumption | | 115 VAC | | 230 VAC | | 100 VAC | |
| | | LAN Enabled | LAN Disabled | LAN Enabled | LAN Disabled | LAN Enabled | LAN Disabled |
| | *On-Idle (ENERGY STAR* Idle (S0))* | *62.18 W* | | 62.49 W | | 62.06 W | |
| | *ENERGY STAR = PMAX Windows running Unneck and Viewperf* | *212.17 W* | | 208.04 W | | 210.42 W | |
| | *ENERGY STAR "Sleep" (S3)* | *4.56 W* | 4.52 W | 4.80 W | 4.75 W | 4.56 W | 4.52 W |
| | *ENEGY STAR "Standby" (Off) (S5)* | *1.25 W* | 1.11 W | 1.44 W | 1.30 W | 1.24 W | 1.09 W |
| Heat Dissipation** | | 115 VAC | | 230 VAC | | 100 VAC | |
| | | LAN Enabled | LAN Disabled | LAN Enabled | LAN Disabled | LAN Enabled | LAN Disabled |
| | *On-Idle (ENERGY STAR* Idle (S0))* | *212.22 btu/hr* | | 213.28 btu/hr | | 211.81 btu/hr | |
| | *ENERGY STAR = PMAX Windows running Unneck and Viewperf* | *724.35 btu/hr* | | 710.25 btu/hr | | 718.37 btu/hr | |
| | *ENERGY STAR "Sleep" (S3)* | *15.6 btu/hr* | 15.4 btu/hr | 16.3 btu/hr | 16.2 btu/hr | 15.6 btu/hr | 15.4 btu/hr |
| | *ENEGY STAR "Standby" (Off) (S5)* | *4.27 btu/hr* | 3.79 btu/hr | 4.91 btu/hr | 4.44 btu/hr | 4.23 btu/hr | 3.72 btu/hr |

| Declared Noise Emissions (Entry-level and High-end configurations) | | |
|---|---|---|
| | | |
| System Configuration (Entry level) | Processor Info | Intel Xeon Processor X3470 2.93 GHz |
| | Memory Info | 2 x 2GB DDR3 1333 MHz |
| | Graphics Info | NVIDIA Quadro NVS 295 |
| | Disks/Optical/Floppy | 1 x 160 GB 7200 RPM SATA/ DVD-ROM/ 16X DVD+RW SuperMulti |

| Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296) | | Sound Power ( LWAd, bels ) |
|---|---|---|
| | Idle | 3.3 Bels (20 dB) |
| | Hard drive Operating (random reads) | 3.3 Bels (20 dB) |
| | Floppy Drive Operating (continuous copy) | |
| | DVD-ROM Operating (sequential reads) | 4.7 Bels (32 dB) |

*System Technical Specifications*

| | | |
|---|---|---|
| System Configuration (High-end) | Processor Info | Intel Xeon Processor X3470 2.93 GHz |
| | Memory Info | 2 x 2GB DDR3 1333 MHz |
| | Graphics Info | NVIDIA Quadro FX 1800 |
| | Disks/Optical/Floppy | 3 x 300GB 10K rpm SATA/ DVD-ROM/ 16X DVD+RW SuperMulti |

| | | |
|---|---|---|
| Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296) | | Sound Power ( LWAd, bels ) |
| | Idle | 3.6 Bels (20 dB) |
| | Hard drive Operating (random reads) | 4.0 Bels (22 dB) |
| | Floppy Drive Operating (continuous copy) | |
| | DVD-ROM Operating (sequential reads) | 4.7Bels (32 dB) |

| | | |
|---|---|---|
| Environmental Requirements | Temperature | Operating: 40° to 95° F (5° to 35° C)<br>Non-operating: -40° to 140° F (-40° to 60° C) |
| | Humidity | Operating: 8% to 85% RH, non-condensing<br>Non-operating: 8% to 90% RH, non-condensing |
| | Maximum Altitude | Operating: 3,000 m (10,000 ft)<br>Non-operating: 9,100 m (30,000 ft) |
| | Dynamic (new) | Shock<br>Operating: ½-sine: 40g, 2-3ms<br>Non-operating:<br>½-sine: 160 cm/s, 2-3ms (~100g)<br>square: 422 cm/s, 20g<br><br>Vibration<br>Operating random: 0.5g (rms), 5-300 Hz<br>Non-operating random: 2.0g (rms), 10-500 Hz<br><br>NOTES: Values represent individual shock events and do not indicate repetitive shock events.Values do not indicate continuous vibration. |
| | Cooling | Above 1524 m (5,000 ft) altitude, maximum operating temperature is de-rated by 1.8° F (1° C) per 305 m (1000 ft) elevation increase |

| Physical Security and Serviceability | |
|---|---|
| Access Panel | Tool-less<br>Includes system board and memory information |
| Optical Drive | Tool-less |
| Floppy Drive | Tool-less |
| Hard Drives | Tool-less |
| Expansion Cards | Tool-less |
| Processor Socket | Tool-less |
| Green User Touch Points | Yes, on tool-free internal chassis mechanisms |

| | |
|---|---|
| Color-coordinated Cables and Connectors | Yes |
| Memory | Tool-less |
| System Board | Screw-In |
| Dual Color Power and HD LED on Front of Computer | Yes |
| Configuration Record SW | Yes |
| Over-Temp Warning on Screen | Yes |
| Restore CD/DVD Set | Restores the computer to its original factory shipping image - Can be obtained via HP Support |
| Dual Function Front Power Switch | Yes, causes a fail-safe power off when held for 4 seconds |
| Padlock Support | Yes (optional): Locks side cover and secures chassis from theft<br>0.22-in diameter padlock loop at rear of system |
| Cable Lock Support | Yes, Kensington Cable Lock (optional): Locks side cover and secures chassis from theft<br>3 mm x 7 mm slot at rear of system |
| Universal Chassis Clamp Lock Support | Yes (optional): Locks side cover and locks cables to chassis. Secures chassis from theft and allows multiple units to be chained together when used with optional cable<br>Threaded feature at rear of system |
| Solenoid Lock and Hood Sensor | Yes (optional)<br>The Solenoid Hood Lock eliminates the need for a physical key by making the chassis lockable through software and a password. You can also lock and unlock the chassis remotely over the network. The Sensor Kit detects when the access panel has been removed |
| Rear Port Control Cover | Yes, locks rear IO cables to prevent cable theft |
| Serial, Parallel, USB, Audio, Network, Enable/Disable Port Control | Yes, enables or disables serial, USB, audio, and network ports |
| Removable Media Write/Boot Control | Yes, prevents ability to boot from removable media on supported devices (and can disable writes to media) |
| Power-On Password | Yes, prevents an unauthorized person from booting up the workstation |
| Setup Password | Yes, prevents an unauthorized person from changing the workstation configuration |
| 3.3V Aux Power LED on System PCA | Yes |
| NIC LEDs (integrated) (Green & Amber) | Yes |
| CPUs and Heatsinks | A T-15 Torx or flat blade screwdriver is needed to remove the CPU heatsink before the CPU can be removed. CPU removal is tool-less |
| Power supply diagnostic LED | No |
| Power Button | Yes, ACPI multi-function |
| Power LED | Yes, blue (normal), red (fault) |
| Hard drive activity LED | Yes, green |
| Internal speaker | Yes |

*System Technical Specifications*

| | |
|---|---|
| System/Emergency ROM Flash Recovery | Recovers corrupted system BIOS. |
| OS CD (Restore OS CD) | Restores computer to its original factory shipping Operating System - No recovery CDs will ship with Windows XP, Vista or Linux - an ISO image will be available on an HD partition. |
| Cooling Solutions | Air cooled forced convection |
| Power Supply Fans | 92 mm x 92 mm x 25 mm 4-wire PWM (non-serviceable) |
| CPU Heatsink Fan(s) | Mainstream (<=95W): 92 mm x 92 mm x 25 mm 5-wire PWM |
| Chassis Fans | 92 mm x 92mm x 25 mm 4-wire PWM |
| Memory Fans | No |
| Access Panel Key Lock | No |
| ACPI-Ready Hardware | Advanced Configuration and Power Management Interface (ACPI).<br>• Allows the system to wake from a low power mode.<br>• Controls system power consumption, making it possible to place individual cards and peripherals in a low-power or powered-off state without affecting other elements of the system |
| Integrated Chassis Handles | No |
| Power Supply | Requires T15 Torx or flat blade screwdriver |
| PCI Card Retention | Yes, rear (all), middle (none), front (full-length cards with extender) |
| Flash ROM | Yes |
| Diagnostic Power Switch LED on board | Yes |
| Clear Password Jumper | Yes |
| Clear CMOS Button | Yes |
| CMOS Battery Holder for easy Replacement | Yes |
| DIMM Connectors for easy Upgrade | Yes |

| BIOS | |
|---|---|
| BIOS 32-bit Services | Standard BIOS 32-bit Service Directory Proposal v0.4 |
| PCI 3.0 Support | Full BIOS support for PCI Express through industry standard interfaces. |
| ATAPI | ATAPI Removable Media Device BIOS Specification Version 1.0. |
| BBS | BIOS Boot Specification v1.01. |
| WMI Support | WMI is Microsoft's implementation of Web-Based Enterprise Management (WBEM) for Windows. WMI is fully compliant with the Distributed Management Task Force (DMTF) Common Information Model (CIM) and WBEM specifications. |
| BIOS Boot Spec 1.01+ | Provides more control over how and from what devices the workstation will boot. |
| BIOS Power On | Users can define a specific date and time for the system to power on. |
| ROM Based Computer Setup Utility (F10) | Review and customize system configuration settings controlled by the BIOS. |
| System/Emergency ROM Flash Recovery with Video | Recovers system BIOS in corrupted Flash ROM. |

| | |
|---|---|
| Replicated Setup | Saves BIOS settings to USB flash device in human readable file. Repset.exe utility can then replicate these settings on machines being deployed without entering Computer Configuration Utility (F10 Setup). |
| SMBIOS | System Management BIOS 2.6, for system management information. |
| Boot Control | Disables the ability to boot from removable media on supported devices. |
| Memory Change Alert | Alerts management console if memory is removed or changed. |
| Thermal Alert | Monitors the temperature state within the chassis. Three modes:<br>• NORMAL - normal temperature ranges.<br>• ALERTED - excessive temperatures are detected. Raises a flag so action can be taken to avoid shutdown or provide for a smoother system shutdown.<br>• SHUTDOWN - excessive temperatures are encountered. Automatically shuts down the computer without warning before hardware component damage occurs. |
| Remote ROM Flash | Provides secure, fail-safe ROM image management from a central network console. |
| ACPI (Advanced Configuration and Power Management Interface) | Allows the system to enter and resume from low power modes (sleep states).<br>Enables an operating system to control system power consumption based on the dynamic workload.<br>Makes it possible to place individual cards and peripherals in a low-power or powered-off state without affecting other elements of the system.<br>Supports ACPI 2.0 for full compatibility with 64-bit operating systems. |
| Ownership Tag | A user-defined string stored in non-volatile memory that is displayed in the BIOS splash screen. |
| Remote Wakeup/Remote Shutdown | System administrators can power on, restart, and power off a client computer from a remote location. |
| ASF 2.0 Compliant | Allows workstation status to be monitored on a remote console. |
| Instantly Available PC (Suspend to RAM - ACPI sleep state S3) | Allows for very low power consumption with quick resume time. |
| Remote System Installation via F12 (PXE 2.1) (Remote Boot from Server) | Allows a new or existing system to boot over the network and download software, including the operating system. |
| ROM revision levels | Reports the system BIOS revision level in Computer Configuration Utility (F10 Setup). Version is available through an industry standard interface (SMBIOS) so that management SW applications can use and report this information. |
| System board revision level | Allows management SW to read revision level of the system board.<br>Revision level is digitally encoded into the HW and cannot be modified. |
| Start-up Diagnostics (Power-on Self-Test) | Assesses system health at boot time with selectable levels of testing. |
| Auto Setup when new hardware installed | System automatically detects addition of new hardware. |
| Keyboard-less Operation | The system can be booted without a keyboard. |
| Localized ROM Setup | Common BIOS image supports System Configuration Utility (F10 Setup) menus in 12 languages with local keyboard mappings. |
| Asset Tag | The user or MIS to set a unique tag string in non-volatile memory. |
| Per-slot Control | Allows I/O slot parameters (option ROM enable/disable, bus latency) to be configured individually. |
| Adaptive Cooling | Control parameters are set according to detected hardware configuration for optimal acoustics. |
| Pre-boot Diagnostics | (Pre-video) critical errors are reported via beeps and blinks on the power LED. |
| AMT 6.0 Compliant | Allows workstation status to be monitored on a remote console |

*System Technical Specifications*

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|---|---|
| Industry Standard Specification Support | |
| Industry Standard | Revision Supported by the BIOS |
| ACPI | Advanced Configuration and Power Management Interface, Version 2.0c |
| ASF | Alert Standard Format Specification, Version 2.0 |
| ATA (IDE) | AT Attachment 6 with Packet Interface (ATA/ATAPI-6), Revision 3b |
| CD Boot | "El Torito" Bootable CD-ROM Format Specification Version 1.0 |
| EDD | • Enhanced Disk Drive Specification Version 1.1<br>• BIOS Enhanced Disk Drive Specification Version 3.0 |
| EHCI | Enhanced Host Controller Interface for Universal Serial Bus, Revision 1.0 |
| PCI | PCI Local Bus Specification, Revision 2.3<br>PCI Power Management Specification, Revision 1.1<br>PCI Firmware Specification, Revision 3.0, Draft .7 |
| PCI Express | PCI Express Base Specification, Revision 2.0 |
| PMM | POST Memory Manager Specification, Version 1.01 |
| SATA | • Serial ATA Specification, Revision 1.0a<br>• Serial ATA 3 Gb/s: Extensions to Serial ATA 1.5 Gb/s, Revision 1.0 |
| SPD | PC SDRAM Serial Presence Detect (SPD) Specification, Revision 1.2B |
| TPM | Trusted Computing Group TPM Specification Version 1.2 |
| USB 1.1 | Universal Serial Bus Revision 1.1 Specification |
| USB 2.0 | Universal Serial Bus Revision 2.0 Specification |
| SMBIOS | System Management BIOS Reference Specification, Version 2.6 |

| System Software Management and Updating | |
|---|---|
| HP Client Management Solutions | Visit: http://www.hp.com/go/easydeploy |
| Product Change | • Program to proactively communicate Product Change Notifications (PCNs) and Customer Advisories by email to customers, based on a user-defined profile.<br>• PCNs provide advance notification of hardware and software changes to be implemented in the factory providing time to plan for transition.o Customer Advisories provide concise, effective problem resolution, greatly reducing the need to call technical support. |
| Support Software CD & WWW | Yes |
| HP Client Manager | Visit: http://www.hp.com/go/easydeploy |
| System Software Manager | Visit: http://www.hp.com/go/ssm |
| Social and Environmental Responsibility | |
| Eco-Label Certifications & Declarations | This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks:<br><br>• ENERGY STAR® (energy-saving features available on selected configurations -Windows only)<br>• US Federal Energy Management Program (FEMP)<br>• China Energy Conservation Program<br>• IT ECO declaration o Japan PC Green label*<br><br>*This product conforms to the examination standards (2003 version) under JEITA's 'PC Green Label |

| | |
|---|---|
| | System.' |
| Batteries | This product complies with ISO standards:<br>• EU Directive 91/ 157/ EEC<br>• EU Directive 93/ 86/ EEC<br>• EU Directive 98/ 101/ EEC<br><br>Batteries used in the product do not contain:<br>• Mercury greater than 5ppm by weight<br>• Cadmium greater than 10ppm by weight<br>• Lead greater than 4000ppm by weight.<br><br>Battery size: CR2032 (coin cell)Battery type: Lithium Metal |
| Restricted Material Usage | This product does not contain any of the following substances in excess of regulatory limits (refer to the HP General Specification for the Environment at: http://www.hp.com/hpinfo/globalcitizenship/environment/supplychain/gen_specifications.html):<br>• Asbestos<br>• Batteries - Mercury<br>• Batteries - Cadmiumo Batteries - Lead (non-rechargeable)<br>• Batteries - Non-rechargeable Alkaline and Carbon-Zinc Batteries<br>• Batteries - Classification as "Not Restricted" for Transport<br>• Brominated Flame Retardants (PBBs, PBDEs, including DecaBDE)<br>• Brominated Flame Retardants (all BFRs in external case plastic parts)<br>• Cadmium and its compounds<br>• Certain Azo Colorants<br>• Chlorinated Hydrocarbons<br>• Chlorinated Paraffins<br>• Formaldehyde<br>• Formaldehyde - emissions<br>• Hexavalent Chromium and its compounds in metallic applications<br>• Hexavalent Chromium and its compounds in non-metallic applications<br>• Lead and its compounds<br>• Lead in paint<br>• Lead in Polyvinyl Chloride (PVC) coating of external cables, wires and cords<br>• Mercury and its compounds<br>• Nickel on external surfaces<br>• Ozone Depleting Substances (ODS)<br>• Polycyclic Aromatic Hydrocarbons (PAH)<br>• Perfluorooctane sulfonates (PFOS) in parts<br>• Perfluorooctane sulfonates (PFOS) in preparations<br>• Polychlorinated Biphenyls (PCBs) and Polychlorinated Terphenyls (PCTs)<br>• Polychlorinated Naphthalenes<br>• Polyvinyl Chloride (PVC) in external case plastic parts<br>• Radioactive Substances<br>• Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO) |
| Packaging | HP follows these guidelines to decrease the environmental impact of product packaging:<br>• Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials.<br>• Eliminate the use of ozone-depleting substances (ODS) in packaging materials. |

| | |
|---|---|
| | • Design packaging materials for ease of disassembly.<br>• Maximize the use of post-consumer recycled content materials in packaging materials.<br>• Use readily recyclable packaging materials such as paper and corrugated materials.<br>• Reduce size and weight of packages to improve transportation fuel efficiency.<br>• Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards. |
| Longevity and Upgrading | This product is designed to be upgraded, possibly extending its useful life by several years. Spare parts are available throughout the warranty period and for up to 5 years after the end of production. Upgradeability features contained in the product include: |
| Packaging Materials | |
| External | Cardboard carton and insert: 1.536 kg |
| Internal | LDPE Foam: .366 kg |
| End-of-Life Management and Recycling | Hewlett-Packard offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: http://www.hp.com/recycle or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.<br>[link to new HP white paper now in progress]<br>Global Citizenship Report: http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html<br>Eco-label certifications:<br>http://www.hp.com/hpinfo/globalcitizenship/environment/productdesign/ecolabels.html<br>ISO 14001 certificates:<br>http://www.hp.com/hpinfo/globalcitizenship/environment/operations/envmanagement.html |
| Hewlett-Packard Corporate Environmental Information | For more information about HP's commitment to the environment: |
| Service, Support and Warranty | On-site Warranty and Service (Note 1): One and three-years, limited warranty and service offering delivers on-site, next business-day (Note 2) service for parts and labor and includes free telephone support (Note 3) 8am - 5pm. Global coverage (Note 2) ensures that any product purchased in one country and transferred to another, non-restricted country will remain fully covered under the original warranty and service offering<br><br>NOTE 1: Terms and conditions may vary by country. Certain restrictions and exclusions apply.<br>NOTE 2: On-site service may be provided pursuant to a service contract between HP and an authorized HP third-party provider, and is not available in certain countries. Global service response times are based on commercially reasonable best effort and may vary by country.<br>NOTE 3: Technical telephone support applies only to HP-configured, HP and HP-qualified, third-party hardware and software. Toll-free calling and 24 x 7 support may not be available in some countries. HP Care Pack Services extend service contracts beyond the standard warranties. Service starts from date of hardware purchase. To choose the right level of service for your HP product, use the HP Care Pack Services Lookup Tool at: http://www.hp.com/go/lookuptool. Additional HP Care Pack Services information by product is available at: http://www.hp.com/hps/carepack. Service levels and response times for HP Care Packs may vary depending on your geographic location. |
| Additional Information | • This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2002/95/EC.<br>• This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive - 2002/96/EC.<br>• Plastic parts weighing over 25 grams used in the product are marked per ISO 11469 and ISO1043.<br>• This product contains 0% recycled materials (by weight)<br>• This product is >90% recycle-able when properly disposed of at end of life. |

As part of its commitment to hardware, software, and solution innovation, HP is proud to introduce this breakthrough platform configuration stability to HP Workstation customers. HP Stable & Consistent Offerings are built on the foundation of a carefully chosen set of hardware and software designed and tested to work with all HP Z Workstation platforms through their end of life. These components and their corresponding HP Workstation platform compatibility are outlined in this section. HP Stable & Consistent Offerings are available worldwide to all HP Workstation customers-no special programs, no additional cost-no kidding. Simply select your hardware and software components when you customize your HP Workstation and be assured that you'll be able to buy that same configuration throughout the lifecycle of the product.

| Processors | Product # | Offering |
|---|---|---|
| | VX094AV | Intel Core i5-650 3.2 4MB/1333 DC CPU |
| | VX096AV | Intel Core i5-670 3.46 4MB/1333 DC CPU |
| | VX099AV | Intel Xeon X3450 2.66 8MB/1333 QC CPU |

| Hard Drives | Product # | Offering |
|---|---|---|
| | VB235AV | HP 250GB SATA 7200 1st HDD |
| | VB239AV | HP 250GB SATA 7200 2nd HDD |
| | WW558AV | HP 250GB SATA 7200 3rd HDD |
| | VB237AV | HP 500GB SATA 7200 1st HDD |
| | VB241AV | HP 500GB SATA 7200 2nd HDD |

| Graphics | Product # | Offering |
|---|---|---|
| | VB120AV | NVIDIA Quadro NVS 295 256MB Graphics |
| | VJ029AV | NVIDIA Quadro NVS 295 256MB Graphics (2nd) |

| Memory | Product # | Offering |
|---|---|---|
| | VB286AV | HP 2GB (2x1GB) DDR3-1333 ECC RAM |
| | VB290AV | HP 4GB (2x2GB) DDR3-1333 ECC RAM |
| | VB296AV | HP 8GB (4x2GB) DDR3-1333 ECC RAM |

| Optical and Removable Storage | Product # | Offering |
|---|---|---|
| | VB281AV | HP 16X DVD+-RW SuperMulti SATA 1st Drive |
| | WU981AV | HP 16X DVD+-RW SuperMulti SATA 2nd Drive |

| Input Devices | Product # | Offering |
|---|---|---|
| | VG956AV | HP USB Standard Keyboard |
| | VB274AV | HP USB Optical Scroll Mouse |

| Operating Systems | Product # | Offering |
|---|---|---|
| | VR944AV | MS Windows 7 Professional 64-bit OS |

| | |
|---|---|
| Processors | Intel® Celeron® Processor G1101 2.26 GHz, 2MB cache, 1066 MHz memory, Dual-Core<br>Intel® Pentium® Processor G6950 2.8 GHz, 3MB cache, 1066 MHz memory, Dual-Core<br>Intel Core Processor i3-540 3.06 GHz, 4MB cache, 1333 MHz memory, Dual-Core, HT<br>Intel Core Processor i3-550 3.20 GHz, 4MB cache, 1333 MHz memory, Dual-Core, HT<br>Intel Core Processor i3-560 3.33 GHz, 4MB cache, 1333 MHz memory, Dual-Core, HT<br>Intel Core Processor i5-650 3.20 GHz, 4MB cache, 1333 MHz memory, Dual-Core, HT, Turbo<br>Intel Core Processor i5-660 3.33 GHz, 4MB cache, 1333 MHz memory, Dual-Core, HT, Turbo<br>Intel Core Processor i5-670 3.46 GHz, 4MB cache, 1333 MHz memory, Dual-Core, HT, Turbo<br>Intel Core Processor i5-680 3.60 GHz, 4MB cache, 1333 MHz memory, Dual-Core, HT, Turbo<br><br>Intel Core Processor i5-750 2.66 GHz, 8 MB cache, 1333 MHz memory, Quad-Core, Turbo<br>Intel Core Processor i5-760 2.80 GHz, 8 MB cache, 1333 MHz memory, Quad-Core, Turbo<br>Intel Core Processor i7-870 2.93 GHz, 8 MB cache, 1333 MHz memory, Quad-Core, HT, Turbo<br>Intel Core Processor i7-880 3.06 GHz, 8 MB cache, 1333 MHz memory, Quad-Core, HT, Turbo<br><br>Intel Xeon Processor X3430 2.40 GHz, 8MB cache, 1333 MHz memory, Quad-Core, Turbo<br>Intel Xeon Processor X3440 2.53 GHz, 8MB cache, 1333 MHz memory, Quad-Core, HT, Turbo<br>Intel Xeon Processor X3450 2.66 GHz, 8MB cache, 1333 MHz memory, Quad-Core, HT, Turbo<br>Intel Xeon Processor X3460 2.80 GHz, 8MB cache, 1333 MHz memory, Quad-Core, HT, Turbo<br>Intel Xeon Processor X3470 2.93 GHz, 8MB cache, 1333 MHz memory, Quad-Core, HT, Turbo<br>Intel Xeon Processor X3480 3.06 GHz, 8MB cache, 1333 MHz memory, Quad-Core, HT, Turbo |

| | | | | |
|---|---|---|---|---|
| SATA (Serial ATA) Hard Drives for HP Workstations | 300GB SATA 10K rpm SFF in 3.5" Frame HDD | Capacity | 300,069,052,416 bytes | |
| | | Height | 1 in; 2.54 cm | |
| | | Width | Media Diameter | 2.5 in; 6.36 cm |
| | | | Physical Size | 4 in; 10.17 cm |
| | | Interface | Serial ATA (3.0 Gb/s), Native Command Queuing enabled | |
| | | Synchronous Transfer Rate (Maximum) | Up to 300 MB/s | |
| | | Buffer | 16 MB | |
| | | Seek Time (typical reads, includes controller overhead, including settling) | Single Track | 0.7 ms (maximum) |
| | | | Average | 4.4 ms |
| | | | Full Stroke | 9.5 ms |
| | | Rotational Speed | 10,000 rpm | |
| | | Logical Blocks | 586,072,368 | |
| | | Operating Temperature | 41° to 131° F (5° to 55° C) | |
| | 160GB SATA 10K rpm SFF in 3.5" Frame HDD | Capacity | 160,041,885,696 bytes | |
| | | Height | 1 in; 2.5 cm | |
| | | Width | Media Diameter | 2.5 in; 6.36 cm |
| | | | Physical Size | 4 in; 10.2 cm |
| | | Interface | Serial ATA (1.5 Gb/s), Native Command Queuing enabled | |
| | | Synchronous Transfer Rate (Maximum) | Up to 300 MB/s | |
| | | Buffer | 16 MB | |
| | | Seek Time (typical reads, includes controller overhead, including settling) | Single Track | 0.7 ms (maximum) |
| | | | Average | 4.4 ms |
| | | | Full Stroke | 9.5 ms |
| | | Rotational Speed | 10,000 rpm | |
| | | Logical Blocks | 312,581,808 | |
| | | Operating Temperature | 41° to 131° F (5° to 55° C) | |
| | 1.5TB SATA 7200 rpm 3Gb/s 3.5" HDD | Capacity | 1.5TB | |
| | | Height | 1 in; 2.54 cm | |
| | | Width | Media Diameter | 3.5 in; 8.9 cm |
| | | | Physical Size | 4.0 in; 10.17 cm |
| | | Interface | Serial ATA (3.0 Gb/s), Native Command Queuing enabled | |
| | | Synchronous Transfer Rate (Maximum) | Up to 300MB/s | |
| | | Buffer | 32MB | |

| | | | |
|---|---|---|---|
| | **Seek Time** (typical reads, includes controller overhead, including settling) | **Single Track** | 2 ms |
| | | **Average** | 11 ms |
| | | **Full Stroke** | 21 ms |
| | **Rotational Speed** | 7,200 rpm | |
| | **Logical Blocks** | 2,930,277,168 | |
| | **Operating Temperature** | 41° to 131° F (5° to 55° C) | |
| 1000GB (1TB) SATA 7200 rpm 3.0Gb/s 3.5" HDD | **Capacity** | 1,000,204,886,016 bytes | |
| | **Height** | 1 in; 2.5 cm | |
| | **Width** | **Media Diameter** | 3.5 in; 8.9 cm |
| | | **Physical Size** | 4 in; 10.2 cm |
| | **Interface** | Serial ATA (3.0 Gb/s), Native Command Queuing enabled | |
| | **Synchronous Transfer Rate** (Maximum) | Up to 300 MB/s | |
| | **Buffer** | 32 MB | |
| | **Seek Time** (typical reads, includes controller overhead, including settling) | **Single Track** | 2 ms |
| | | **Average** | 11 ms |
| | | **Full Stroke** | 21 ms |
| | **Rotational Speed** | 7,200 rpm | |
| | **Logical Blocks** | 1,953,525,168 | |
| | **Operating Temperature** | 41° to 131° F (5° to 55° C) | |
| 500GB SATA 7200 rpm 3Gb/s 3.5" HDD | **Capacity** | 500,107,862,016 bytes | |
| | **Height** | 1 in; 2.5 cm | |
| | **Width** | **Media Diameter** | 3.5 in; 8.9 cm |
| | | **Physical Size** | 4 in; 10.2 cm |
| | **Interface** | Serial ATA (3.0 Gb/s), Native Command Queuing enabled | |
| | **Synchronous Transfer Rate** (Maximum) | 300 MB/s | |
| | **Buffer** | 16 MB | |
| | **Seek Time** (typical reads, includes controller overhead, including settling) | **Single Track** | 2 ms |
| | | **Average** | 11 ms |
| | | **Full Stroke** | 21 ms |
| | **Rotational Speed** | 7,200 rpm | |
| | **Logical Blocks** | 976,773,168 | |
| | **Operating Temperature** | 41° to 131° F (5° to 55° C) | |
| 320GB SATA 7200 rpm 3Gb/s 3.5" HDD | **Capacity** | 320,072,933,376 bytes | |
| | **Height** | 0.98 in; 2.5 cm | |
| | **Width** | **Media Diameter** | 3.5 in; 8.9 cm |
| | | **Physical Size** | 4.0 in; 10.17 cm |

| | | | |
|---|---|---|---|
| | Interface | Serial ATA (3.0 Gb/s), Native Command Queuing enabled | |
| | Synchronous Transfer Rate (Maximum) | 300 MB/s | |
| | Buffer | 8 MB | |
| | Seek Time (typical reads, includes controller overhead, including settling) | Single Track | 2 ms |
| | | Average | 12 ms |
| | | Full Stroke | 21 ms |
| | Rotational Speed | 7,200 rpm | |
| | Logical Blocks | 625,142,448 | |
| | Operating Temperature | 41° to 131° F (5° to 55° C) | |
| 250GB SATA 7200 rpm 3Gb/s 3.5" HDD | Capacity | 250,059,350,016 bytes | |
| | Height | 1 in; 2.54 cm | |
| | Width | Media Diameter | 3.5 in; 8.9 cm |
| | | Physical Size | 4.0 in; 10.17 cm |
| | Interface | Serial ATA (3.0 Gb/s), Native Command Queuing enabled | |
| | Synchronous Transfer Rate (Maximum) | 300 MB/s | |
| | Buffer | 8 MB | |
| | Seek Time (typical reads, includes controller overhead, including settling) | Single Track | 2 ms |
| | | Average | 11 ms |
| | | Full Stroke | 21 ms |
| | Rotational Speed | 7,200 rpm | |
| | Logical Blocks | 488,397,168 | |
| | Operating Temperature | 41° to 131° F (5° to 55° C) | |
| 160GB SATA 7200 rpm 3Gb/s 3.5" HDD | Capacity | 160,041,885,696 bytes | |
| | Height | 1 in; 2.5 cm | |
| | Width | Media Diameter | 3.5 in; 8.9 cm |
| | | Physical Size | 4 in; 10.2 cm |
| | Interface | Serial ATA (3.0 Gb/s), Native Command Queuing enabled | |
| | Synchronous Transfer Rate (Maximum) | 300 MB/s | |
| | Buffer | 8 MB | |
| | Seek Time (typical reads, includes controller overhead, including settling) | Single Track | 2 ms |
| | | Average | 11 ms |
| | | Full Stroke | 21 ms |
| | Rotational Speed | 7,200 rpm | |
| | Logical Blocks | 312,581,808 | |
| | Operating Temperature | 41° to 131° F (5° to 55° C) | |

*Technical Specifications - Hard Drives*

| | | | | |
|---|---|---|---|---|
| HP Solid State Drives for Workstations | HP 160GB SATA X25-M SSD | Capacity | 160,041,885,696 bytes | |
| | | Height | 0.28 in; 0.7 cm | |
| | | Width | Media Diameter | NaN in; NaN cm |
| | | | Physical Size | 2.75 in; 6.985 cm |
| | | Interface | SATA | |
| | | Synchronous Transfer Rate (Maximum) | 3Gb/s | |
| | | Seek Time (typical reads, includes controller overhead, including settling) | Average | Read: 75 microseconds; Write: 85 microseconds |
| | | Logical Blocks | 312,581,808 | |
| | | Operating Temperature | 32° to 158° F (0° to 70° C) | |

| | | |
|---|---|---|
| Integrated Intel Graphics Media Accelerator HD | Form Factor | Integrated |
| | Graphics Controller | Intel Integrated Graphics Media Accelerator HD |
| | Bus Type | PCI Express x16 |
| | Memory | Graphics memory is shared with system memory. Graphics memory usage varies depending on the amount of system memory installed, BIOS settings, operating system, and system load. 32 MB is pre-allocated for graphics use at system boot time. Additional memory can be allocated at boot time by the BIOS for PAVP (Protected Audio Video Playback) support for playback of protected video content. For Vista, use of PAVP heavy mode preallocates an additional 96MB.<br>Additional memory is allocated for graphics as needed using Intel's Dynamic Video Memory Technology (DVMT), to provide an optimal balance between graphics and system memory use. |
| | Connectors | Z200; 1 Single Link DVI-I, 1 DP<br>Z200 SFF; 1 VGA, 1 DP<br><br>Graphics adapters are orderable as an accessory as necessary. |
| | RAMDAC | Integrated, 350 MHz |
| | Display Output | Z200: Integrated dual independent monitor support facilitated via one DVI port and one DisplayPort integrated on the back plane of the system board and presented as part of the rear I/O set of interfaces. Second DVI supported via optional DisplayPort to DVI-D adapter. VGA support via optional DVI to VGA adapter or DisplyPort to VGA adapter.<br><br>Z200 SFF: Integrated dual independent monitor support facilitated via one VGA port and one DisplayPort integrated on the back plane of the system board and presented as part of the rear I/O set of interfaces. Second VGA supported via optional DisplayPort to VGA adapter. DVI support via optional DisplayPort to DVI adapter.<br><br>Intel HD graphics can provide audio to displays supporting audio over DisplayPort or HDMI (via DisplayPort to HDMI adapter) |
| | Supported Graphics APIs | Microsoft DirectX 10, OpenGL 2.1 |

*Technical Specifications - Graphics*

| | | |
|---|---|---|
| NVIDIA Quadro NVS 295 256MB Graphics Card | Form Factor | 2.731 inches (H) × 6.600 inches (L), Half-Height |
| | Graphics Controller | NVIDIA Quadro NVS 295 Graphics Board |
| | Bus Type | PCI Express x16, Generation 2.0 |
| | Memory | 256 MB GDDR3 SDRAM unified graphics memory |
| | Connectors | 2 DisplayPort<br>Comes with 2 DisplayPort to DVI-D Adapters<br>('DisplayPort to VGA' and 'DisplayPort to DL DVI' adapters available as an accessory) |
| | Maximum Resolution | Two DisplayPort outputs drive two digital displays up to 2560 x 1600<br><br>NOTE: This card supports up to two displays |
| | Display Output | • Drives DisplayPort enabled digital displays at resolutions up to 2560 × 1600 at 60 Hz with reduced blanking<br>• Drives DVI enabled digital displays at resolutions up to 1920 × 1200 at 60 Hz with reduced blanking (through DisplayPort to DVI-D (single link) cable) |
| | Supported Graphics APIs | OpenGL 3.0<br>DirectX 10.0 |
| | Available Graphics Drivers | Genuine Windows 7 Professional (64-bit and 32-bit)<br>Genuine Windows Vista Business (64-bit and 32-bit)<br>Microsoft Windows XP Professional (64-bit and 32-bit)<br>Red Hat Enterprise Linux(RHEL) WS4 (64-bit and 32-bit)<br>* WS4 not supported on Z200 & Z200 SFF<br>Red Hat Enterprise Linux(RHEL) 5 Desktop/Workstation (64-bit and 32-bit)<br>SUSE Linux Enterprise Desktop 11 (64-bit and 32-bit)<br><br>HP qualified drivers may be preloaded or available from the HP support Web site:<br>http://welcome.hp.com/country/us/en/support.html<br><br>Novell SUSE Linux Enterprise drivers may also be obtained from:<br>ftp://download.nvidia.com/novell or http://www.nvidia.com |
| | Power consumption | 22.69 Watts |

*Technical Specifications - Graphics*

| | | |
|---|---|---|
| ATI FirePro V3700 256MB Graphics Card | Form Factor | 4.40 inches (H) × 6.70 inches (L) (11.18 cm (H) × 17.02 cm (L)) |
| | Graphics Controller | ATI FirePro V3700 Graphics Board |
| | Bus Type | PCI Express x16, Generation 2.0 |
| | Memory | 256 MB GDDR3 SDRAM unified graphics memory |
| | Connectors | 2 Dual Link DVI-I<br>Two DVI-I to VGA adapters included |
| | Maximum Resolution | Two dual-link DVI-I outputs drive two digital displays at resolutions up to 2560 x 1600 @ 60Hz or two analog displays at resolutions up to 2048 x 1536 @ 85Hz<br>NOTE: This card supports up to two displays |
| | Shading architecture | Full Shader Model 4.0<br>• 40 Stream Processing Units<br>• Dynamic load balancing and resource allocation for vertex, geometry, and pixel shaders<br>• Common instruction set and texture unit access supported for all types of shaders<br>• Dedicated branch execution units and texture address processors |
| | Supported graphics APIs | OpenGL 3.0<br>DirectX 10.1 |
| | Available graphics drivers | Genuine Windows 7 Professional (64-bit and 32-bit)<br>Genuine Windows Vista Business (64-bit and 32-bit)<br>Microsoft Windows XP Professional (64-bit and 32-bit)<br>Red Hat Enterprise Linux WS4 (64-bit and 32-bit)<br>* WS4 not supported on Z200 & Z200 SFF<br>Red Hat Enterprise Linux 5 Desktop (64-bit and 32-bit)<br>SUSE Linux Enterprise Desktop 11 (64-bit and 32-bit)<br><br>HP qualified drivers may be preloaded or available from the HP support Web site:<br>http://welcome.hp.com/country/us/en/support.html |
| | Power consumption | 32 Watts |

*Technical Specifications - Graphics*

| | | |
|---|---|---|
| NVIDIA Quadro FX 380 256MB Graphics Card | Form Factor | 4.376 inches (H) × 6.60 inches (L) |
| | Graphics Controller | NVIDIA Quadro FX 380 Graphics Board |
| | Bus Type | PCI Express x16, Generation 2.0 |
| | Memory | 256 MB GDDR3 SDRAM unified graphics memory |
| | Connectors | 2 Dual Link DVI-I<br>Two DVI-I to VGA adapters included |
| | Maximum Resolution | Two dual-link DVI-I outputs drive two digital displays at resolutions up to 2560 x 1600 @ 60Hz or two analog displays at resolutions up to 2048 x 1536 @ 85Hz<br>NOTE: This card supports up to two displays |
| | RAMDAC | Dual Internal 400 MHz DAC |
| | Shading architecture | Full Shader Model 4.0 (OpenGL 2.1/DirectX 10 class)<br>• Long fragment programs (unlimited instructions)<br>• Long vertex programs (unlimited instructions)<br>• Looping and subroutines (up to 256 loops per vertex program)<br>• Dynamic flow control<br>• Conditional execution |
| | Supported graphics APIs | OpenGL 3.0<br>Direct X 10.0 |
| | Available graphics drivers | Genuine Windows 7 Professional (64-bit and 32-bit)<br>Genuine Windows Vista Business (64-bit and 32-bit)<br>Microsoft Windows XP Professional (64-bit and 32-bit)<br>Red Hat Enterprise Linux(RHEL) WS4 (64-bit and 32-bit)<br>* WS4 not supported on Z200 & Z200 SFF<br>Red Hat Enterprise Linux(RHEL) 5 Desktop/Workstation<br>SUSE Linux Enterprise Desktop 11 (64-bit and 32-bit)<br><br>HP qualified drivers may be preloaded or available from the HP support Web site:<br>http://welcome.hp.com/country/us/en/support.html<br><br>Novell SUSE Linux Enterprise drivers may also be obtained from:<br>ftp://download.nvidia.com/novell or http://www.nvidia.com |
| | High-level Shader Languages | • Optimized compiler for Cg and Microsoft HLSL<br>• OpenGL 2.1 and DirectX 10 support<br>• Open source compiler |
| | CUDA™ Parallel Processor Cores | 16 |
| | Power consumption | 33.91 Watts |

*Technical Specifications - Graphics*

| | | |
|---|---|---|
| ATI FirePro V3800 512MB Graphics Card | Form Factor | 2.71 in (H) x 6.61 in (L) "Single-Wide" |
| | Graphics Controller | ATI FirePro V3800 Graphics Board |
| | Bus Type | PCI Express x16, Generation 2.0 |
| | Memory | 512 MB DDR3 SDRAM |
| | Connectors | 1 DL DVI, 1 DP output<br>One DP to DVI adapter included |
| | Maximum Resolution | Up to two digital displays at resolutions up to 2560 x 1600 @ 60Hz or two analog displays, one at resolutions up to 2048 x 1536 @ 85Hz, the other at up to 1920 x 1200 @ 60Hz (165 MHz dot clock)<br>NOTES: This card supports up to two displays<br>Use of more than two displays on Linux requires support for xrandr 1.2 or greater in the X server |
| | RAMDAC | 400 MHz DAC, 10-bits per channel |
| | Image Quality Features | • Full 30-bit display pipeline for more accurate color reproduction superior image quality (30-bit monitor required for full 30-bit display)<br>• Advanced video capabilities, including high fidelity gamma, color correction and scaling<br>• Dedicated hardware (UVD2) for H.264, VC-1, and MPEG2 decode |
| | Shading architecture | • Support for Full Shader Model 5.0<br>• 400 Stream Processing Units<br>• Dynamic load balancing and resource allocation for vertex, geometry, and pixel shaders<br>• Common instruction set and texture unit access supported for all types of shaders<br>• Dedicated branch execution units and texture address processors<br>• Anti-aliases Shaders and Textures as well as Polygon Edges |
| | Supported graphics APIs | DirectX 11, OpenGL 3.2, OpenCL 1.0 and full implementation of DirectCompute 11<br><br>(OpenCL™ compliant driver and SDK release scheduled in 2010) |
| | Available graphics drivers | Genuine Windows 7 Professional (64-bit and 32-bit)<br>Genuine Windows Vista Business (64-bit and 32-bit)<br>Microsoft Windows XP Professional (64-bit and 32-bit)<br>Red Hat Enterprise Linux (RHEL) WS4<br>* WS4 not supported on Z200 & Z200 SFF<br>Red Hat Enterprise Linux(RHEL) 5 Desktop/Workstation<br>SUSE Linux Enterprise Desktop 11 (64-bit and 32-bit)<br>HP qualified drivers may be preloaded or available from the HP support Web site:<br>http://welcome.hp.com/country/us/en/support.html |
| | Parallel Processor Cores | 400 Stream processors (675 single-precision GFLOPS performance) |
| | Power consumption | 43 Watts |

*Technical Specifications - Graphics*

| | | |
|---|---|---|
| NVIDIA Quadro FX 580 512MB Graphics Card | Form Factor | 4.376 inches (H) × 6.60 inches (L) |
| | Graphics Controller | NVIDIA Quadro FX 580 Graphics Board |
| | Bus Type | PCI Express x16, Generation 2.0 |
| | Memory | 512MB GDDR3 SDRAM unified graphics memory |
| | Connectors | 2 DisplayPort, 1 Dual-Link DVI-I.<br>One DisplayPort to DVI adapter included<br>('DVI to VGA', 'DisplayPort to VGA' and 'DisplayPort to Dual Link DVI' adapters available as an accessory) |
| | Maximum Resolution | • Two DisplayPort outputs drive two digital displays up to 2560 x 1600<br>• One dual-link DVI-I output drives one digital display at resolutions up to 2560 x 1600 @ 60Hz or one analog display at resolutions up to 2048 x 1536 @ 85Hz<br><br>NOTE: This card supports up to two displays |
| | RAMDAC | Single Internal 400 MHz DAC |
| | Shading architecture | Full Shader Model 4.0 (OpenGL 2.1/DirectX 10 class)<br><br>• Long fragment programs (unlimited instructions)<br>• Long vertex programs (unlimited instructions)<br>• Looping and subroutines (up to 256 loops per vertex program)<br>• Dynamic flow control<br>• Conditional execution |
| | Supported graphics APIs | OpenGL 3.0<br>Direct X 10.0 |
| | Available graphics drivers | Genuine Windows 7 Professional (64-bit and 32-bit)<br>Genuine Windows Vista Business (64-bit and 32-bit)<br>Microsoft Windows XP Professional (64-bit and 32-bit)<br>Red Hat Enterprise Linux(RHEL) WS4 (64-bit and 32-bit)<br>* WS4 not supported on Z200 & Z200 SFF<br>Red Hat Enterprise Linux(RHEL) 5 Desktop/Workstation<br>SUSE Linux Enterprise Desktop 11 (64-bit and 32-bit)<br><br>HP qualified drivers may be preloaded or available from the HP support Web site:<br>http://welcome.hp.com/country/us/en/support.html<br><br>Novell SUSE Linux Enterprise drivers may also be obtained from:<br>ftp://download.nvidia.com/novell or http://www.nvidia.com |
| | High-level Shader Languages | • Optimized compiler for Cg and Microsoft HLSL<br>• OpenGL 2.1 and DirectX 10 support<br>• Open source compiler |
| | CUDA™ Parallel Processor Cores | 32 |
| | Power consumption | 40 Watts |

*Technical Specifications - Graphics*

| | | |
|---|---|---|
| ATI FirePro V4800 1GB Graphics Card | Form Factor | 4.37 in (H) x 6.61 in (L) |
| | Graphics Controller | ATI FirePro V4800 Graphics Card |
| | Bus Type | PCI Express x 16, Generation 2.0 |
| | Memory | 1GB GDDR5 SDRAM |
| | Connectors | 2 DisplayPort, 1 dual link DVI Output<br>One DP to DVI adapter included |
| | Maximum Resolution | Up to three digital displays at resolutions up to 2560 x 1600 @ 60Hz or up to three analog displays, one at resolutions up to 2048 x 1536 @ 85Hz, plus two resolutions up to 1920 x 1200 @ 60Hz (165 MHz dot clock)<br><br>NOTE: This card supports up to three displays with Windows 7, Vista or Linux, and up to two displays on XP |
| | RAMDAC | 400 MHz DAC, 10-bit per channel |
| | Image Quality Features | • Up to 3 independent outputs with ATI Eyefinity technology support (More information at: www.amd.com/us/products/technologies/eyefinity/)<br>• Full 30-bit display pipeline for more accurate color reproduction superior image quality2<br>• Advanced video capabilities, including high fidelity gamma, color correction and scaling<br>• Dedicated hardware (UVD2) for H.264, VC-1, and MPEG2 decode<br><br>NOTE: The use of more than two displays on Linux requires support for xrandr 1.2 or greater in the X server |
| | Shading architecture | • Support for Full Shader Model 5.0<br>• Dynamic load balancing and resource allocation for vertex, geometry, and pixel shaders<br>• Common instruction set and texture unit access supported for all types of shaders<br>• Dedicated branch execution units and texture address processors<br>• Anti-aliases Shaders and Textures as well as Polygon Edges |
| | Supported graphics APIs | DirectX 11, OpenGL 3.2, OpenCL 1.03 and full implementation of DirectCompute 11<br><br>(OpenCL™ compliant driver and SDK release scheduled in 2010) |
| | Available graphics drivers | Genuine Windows 7 Professional (64-bit and 32-bit)<br>Genuine Windows Vista Business (64-bit and 32-bit)<br>Microsoft Windows XP Professional (64-bit and 32-bit)<br>Red Hat Enterprise Linux(RHEL) WS4 (64-bit and 32-bit)<br>* WS4 not supported on Z200 & Z200 SFF<br>Red Hat Enterprise Linux (RHEL) 5 Desktop/Workstation (64-bit and 32-bit)<br>SUSE Linux Enterprise Desktop 11 (64-bit and 32-bit)<br>HP qualified drivers may be preloaded or available from the HP support Web site:<br>http://welcome.hp.com/country/us/en/support.html |
| | Parallel Processor Cores | 800 stream processors (675 MFLOPS single-precision performance) |
| | Power consumption | 69 Watts |

*Technical Specifications - Graphics*

| | | |
|---|---|---|
| NVIDIA Quadro 600 1GB Graphics Card | Form Factor | 2.731" H x 6.6" L<br>Single Slot<br>Small Form Factor |
| | Graphics Controller | NVIDIA Quadro 600 Graphics Card |
| | Bus Type | PCI Express 2.0 x16 |
| | Memory | 1 GB GDDR3<br>128-bit |
| | Connectors | 1 DVI-I output, 1DisplayPort output<br>One DP to DVI adapter included with card<br><br>DVI to VGA, DisplayPort to VGA and DisplayPort to DVI adapters available as accessories |
| | Maximum Resolution | DisplayPort (up to 2560 x 1600 @ 60Hz and 1920x1200 @ 120Hz)<br>Dual-link DVI-I output (up to 2560 x 1600 @ 60Hz and 1920x1200 @ 120Hz) |
| | Shading Architecture | Shader Model 5.0 |
| | Supported Graphics APIs | OpenGL 4.0<br>DirectX 11<br>CUDA API support includes:<br>CUDA C, CUDA C++, DirectCompute 5.0, OpenCL, Java, Python, and Fortran |
| | Available Graphics Drivers | Genuine Windows 7 Professional (64-bit and 32-bit)<br>Genuine Windows Vista Business (64-bit and 32-bit)<br>Microsoft Windows XP Professional (64-bit and 32-bit)<br>Red Hat Enterprise Linux (RHEL) WS4 (64-bit and 32-bit)<br>* WS4 not supported on Z200 and Z200 SFF<br>Red Hat Enterprise Linux (RHEL) 5 Desktop/Workstation (64-bit and 32-bit)<br>SUSE Linux Enterprise Desktop 11 (64-bit and 32-bit)<br><br>HP qualified drivers may be preloaded or available from the HP support Web site: http://welcome.hp.com/country/us/en/support.html<br><br>Novell SUSE Linux Enterprise drivers may also be obtained from: ftp://download.nvidia.com/novell or http://www.nvidia.com |
| | Parallel Processor Cores | 96 CUDA parallel processing cores |
| | Power consumption | 40 Watts |

*Technical Specifications - Graphics*

| | | |
|---|---|---|
| ATI FirePro V5700 512MB Graphics Card | Form Factor | 4.40 inches (H) × 6.70 inches (L) (11.18 cm (H) × 17.02 cm (L)) |
| | Graphics Controller | ATI FirePro V5700 Graphics Board |
| | Bus Type | PCI Express x16, Generation 2.0 |
| | Memory | 512 MB GDDR3 SDRAM unified graphics memory |
| | Connectors | 2 DisplayPort, 1 Dual-Link DVI-I.<br>One DisplayPort to DVI adapter included<br>('DVI to VGA', 'DisplayPort to VGA' and 'DisplayPort to Dual Link DVI' adapters available as an accessory) |
| | Maximum Resolution | • Two DisplayPort outputs drive two digital displays up to 2560 x 1600<br>• One dual-link DVI-I output drives one digital display at resolutions up to 2560 x 1600 @ 60Hz or one analog display at resolutions up to 2048 x 1536 @ 85Hz<br><br>NOTE: This card supports up to two displays |
| | Shading architecture | Full Shader Model 4.0<br><br>• 320 Stream Processing Units<br>• Dynamic load balancing and resource allocation for vertex, geometry, and pixel shaders<br>• Common instruction set and texture unit access supported for all types of shaders<br>• Dedicated branch execution units and texture address processors |
| | Supported graphics APIs | OpenGL 3.0<br>DirectX 10.1 |
| | Available graphics drivers | Genuine Windows 7 Professional (64-bit and 32-bit)<br>Genuine Windows Vista Business (64-bit and 32-bit)<br>Microsoft Windows XP Professional (64-bit and 32-bit)<br>Red Hat Enterprise Linux WS4 (64-bit and 32-bit)<br>* WS4 not supported on Z200 & Z200 SFF<br>Red Hat Enterprise Linux 5 Desktop/Workstation (64-bit and 32-bit)<br>SUSE Linux Enterprise Desktop 11 (64-bit and 32-bit)<br><br>HP qualified drivers may be preloaded or available from the HP support Web site:<br>http://welcome.hp.com/country/us/en/support.html |
| | Power consumption | 56 Watts |

*Technical Specifications - Graphics*

| | | |
|---|---|---|
| ATI FirePro V5800 1GB Graphics Card | Form Factor | 4.38 in (H) x 9.0 in (L) |
| | Graphics Controller | ATI FirePro V5800 Graphics Card |
| | Bus Type | PCI Express x 16, Generation 2.0 |
| | Memory | 1GB GDDR5 SDRAM |
| | Connectors | 2 DP, 1 DL DVI<br><br>One DP to DVI adapter included |
| | Maximum Resolution | Up to three digital displays at resolutions up to 2560 x 1600 @ 60Hz or up to three analog displays, one resolution up to 2048 x 1536 @ 85Hz, plus two display resolutions up to 1920 x 1200 @ 60 Hz (165 MHz dot clock)<br><br>NOTES: This card supports up to three displays with Vista, Win7, or Linux, up to two displays with XP<br><br>The use of more than two displays on Linux requires support for xrandr 1.2 or greater in the X server |
| | RAMDAC | 400 MHz DAC, 10-bits per channel |
| | Image Quality Features | • 3 independent outputs with ATI Eyefinity1 technology support (More information at: www.amd.com/us/products/technologies/eyefinity/)<br>• Full 30-bit display pipeline for more accurate color reproduction superior image quality2<br>• Advanced video capabilities, including high fidelity gamma, color correction and scaling<br>• Dedicated hardware (UVD2) for H.264, VC-1, and MPEG2 decode |
| | Shading architecture | • Support for Full Shader Model 5.0<br>• Dynamic load balancing and resource allocation for vertex, geometry, and pixel shaders<br>• Common instruction set and texture unit access supported for all types of shaders<br>• Dedicated branch execution units and texture address processors<br>• Anti-aliases Shaders and Textures as well as Polygon Edges |
| | Supported graphics APIs | DirectX 11, OpenGL 3.2, OpenCL 1.0 and full implementation of DirectCompute 11<br><br>(OpenCL™ compliant driver and SDK release scheduled in 2010) |
| | Available graphics drivers | Genuine Windows 7 Professional (64-bit and 32-bit)<br>Genuine Windows Vista Business (64-bit and 32-bit)<br>Microsoft Windows XP Professional (64-bit and 32-bit)<br>Red Hat Enterprise Linux(RHEL) WS4 (64-bit and 32-bit)<br>* WS4 not supported on Z200 & Z200 SFF<br>Red Hat Enterprise Linux (RHEL) 5 Desktop/Workstation (64-bit and 32-bit)<br>SUSE Linux Enterprise Desktop 11 (64-bit and 32-bit)<br>HP qualified drivers may be preloaded or available from the HP support Web site: http://welcome.hp.com/country/us/en/support.html |
| | Parallel Processor Cores | 800 stream processors (1.35 TFLOPS single-precision performance) |
| | Power consumption | 75 Watts |

*Technical Specifications - Graphics*

| | | |
|---|---|---|
| NVIDIA Quadro FX 1800 768MB Graphics Card | Form Factor | 4.376 inches (H) x 7.8 inches (L) |
| | Graphics Controller | NVIDIA Quadro FX 1800 Graphics Board |
| | Bus Type | PCI Express x16, Generation 2.0 |
| | Memory | 768MB GDDR3 SDRAM unified graphics memory |
| | Connectors | 2 DisplayPort, 1 Dual-Link DVI-I.<br>One DisplayPort to DVI-D adapter included<br>('DVI to VGA', 'DisplayPort to VGA' and 'DisplayPort to Dual Link DVI' adapters available as an accessory) |
| | Maximum Resolution | • Two DisplayPort outputs drive two digital displays up to 2560 x 1600<br>• One dual-link DVI-I output drives one digital display at resolutions up to 2560 x 1600 @ 60Hz or one analog display at resolutions up to 2048 x 1536 @ 85Hz<br><br>NOTE: This card supports up to two displays |
| | RAMDAC | Single Internal 400 MHz DAC |
| | Shading Architecture | Full Shader Model 4.0 (OpenGL 2.1/DirectX 10 class)<br><br>• Long fragment programs (unlimited instructions)<br>• Long vertex programs (unlimited instructions)<br>• Looping and subroutines (up to 256 loops per vertex program)<br>• Dynamic flow control<br>• Conditional execution |
| | Supported Graphics APIs | OpenGL 3.0<br>Direct X 10.0 |
| | Available Graphics Drivers | Genuine Windows 7 Professional (64-bit and 32-bit)<br>Genuine Windows Vista Business (64-bit and 32-bit)<br>Microsoft Windows XP Professional (64-bit and 32-bit)<br>Red Hat Enterprise Linux(RHEL) WS4 (64-bit and 32-bit)<br>* WS4 not supported on Z200 & Z200 SFF<br>Red Hat Enterprise Linux(RHEL) 5 Desktop/Workstation<br>SUSE Linux Enterprise Desktop 11 (64-bit and 32-bit)<br><br>HP qualified drivers may be preloaded or available from the HP support Web site:<br>http://welcome.hp.com/country/us/en/support.html<br><br>Novell SUSE Linux Enterprise drivers may also be obtained from:<br>ftp://download.nvidia.com/novell or http://www.nvidia.com |
| | High-level Shader Languages | • Optimized compiler for Cg and Microsoft HLSL<br>• OpenGL 2.1 and DirectX 10 support<br>• Open source compiler |
| | CUDA™ Parallel Processor Cores | 64. |
| | Power consumption | 59 Watts |

*Technical Specifications - Graphics*

| | | |
|---|---|---|
| NVIDIA Quadro 2000 1GB Graphics Card | Form Factor | 4.376" H x 7" L<br>Single Slot |
| | Graphics Controller | NVIDIA Quadro 2000 Graphics Card |
| | Bus Type | PCI Express 2.0 x16 |
| | Memory | 1 GB GDDR5<br>128-bit |
| | Connectors | 1 DVI-I output, 2 DisplayPort outputs<br>One DP to DVI adapter included with card<br><br>DVI to VGA, DisplayPort to VGA and DisplayPort to DVI adapters available as accessories |
| | Maximum Resolution | Dual DisplayPort (up to 2560 x 1600 @ 60Hz and 1920x1200 @ 120Hz)<br>Dual-link DVI-I output (up to 2560 x 1600 @ 60Hz and 1920x1200 @ 120Hz) |
| | Image Quality Features | • Up to 16K x16K texture and render processing<br>• Transparent multisampling and super sampling<br>• 16x angle independent anisotropic filtering<br>• 128-bit floating point performance<br>• 32-bit per-component floating point texture filtering and blending<br>• Support for any combination of two connected displays<br>• DisplayPort 1.1a, HDMI 1.3a, and HDCP support<br>• NVIDIA® 3D Vision™ technology, 3D DLP, Interleaved, and other 3D stereo format support<br>• Full OpenGL quad buffered stereo support<br>• Underscan/overscan compensation and hardware scaling<br>• NVIDIA® nView® multi-display technology |
| | Shading Architecture | Shader Model 5.0 |
| | Supported Graphics APIs | OpenGL 4.0<br>DirectX 11<br>CUDA API support includes:<br>CUDA C, CUDA C++, DirectCompute 5.0, OpenCL, Java, Python, and Fortran |
| | Available Graphics Drivers | Genuine Windows 7 Professional (64-bit and 32-bit)<br>Genuine Windows Vista Business (64-bit and 32-bit)<br>Microsoft Windows XP Professional (64-bit and 32-bit)<br>Red Hat Enterprise Linux (RHEL) WS4 (64-bit and 32-bit)<br>* WS4 not supported on Z200 and Z200 SFF<br>Red Hat Enterprise Linux (RHEL) 5 Desktop/Workstation (64-bit and 32-bit)<br>SUSE Linux Enterprise Desktop 11 (64-bit and 32-bit)<br><br>HP qualified drivers may be preloaded or available from the HP support Web site: http://welcome.hp.com/country/us/en/support.html<br><br>Novell SUSE Linux Enterprise drivers may also be obtained from: ftp://download.nvidia.com/novell or http://www.nvidia.com |
| | Parallel Processor Cores | 192 CUDA parallel processing cores |
| | Power consumption | 62 Watts |

| | | |
|---|---|---|
| HP Thin USB Powered Speakers | Frequency Response (-3dB, 24-bit/96kHz input) | FO to 20kHz |
| | Dimensions | Speakers: 14.52 x 9.50 x 2.45 cm (5.72 x 3.74 x 0.96 in) per speaker |
| | On/Off/Volume Controls | Right side of right speaker |
| | Power LED | Front of right speaker (green) |
| | Watts | 2/3 watt (normal/maximum) |
| | Net weight | 0.31kg (0.68 lbs) |
| | Environmental (all conditions non-condensing) | Temperature (operating): -10° to 40° C (14° to 104° F)<br>Relative Humidity (operating): 40% to 90% |
| | Speaker cable length | Input cord: 1800mm±35mm (5.91 ft)<br>L-channel cord: 1000mm±35mm (3.28 ft)<br>USB cord: 1800mm±35mm (5.91 ft) |
| | Color | HP Carbonite |
| | Kit Contents | One pair of HP Thin USB Powered Speakers with attached audio signal and USB power cables for connecting to your PC<br>HP Warranty documentation |

| | | |
|---|---|---|
| Integrated Intel/Realtek HD ALC262 Audio | Type | Integrated |
| | High Definition Codec | Yes |
| | FM Synthesis Support | Yes |
| | OPL3 FM Synthesis Support | Yes |
| | Sound Blaster Compatibility | Yes |
| | Meets Premium performance for Windows Logo Program 3.0 | Yes |
| | Audio Jacks | Front panel microphone in and headphone out - fixed usage.<br>Rear panel line in and line out jacks - jacks are retaskable<br>One Line-In* (12-K ohm Input Impedance)*<br>NOTE: External Speakers need to be powered externally. |
| | Sampling | 3 stereo ADCs support 16/20-bit PCM format with 44.1K/48K/96kHz sample rate<br>2 stereo DAC supports 16/20/24-bit PCM format with 44.1K/48K/96K/192kHz sample rate |
| | Wavetable Syntheses (software) | Yes – GM and FM Midi Support, Direct Music and Down Loadable Soundset (4 Meg DLS Level 1 and 2 Support) |
| | 3D Positional Sound | No |
| | Digital Audio | Yes |
| | Analog Audio | Yes |
| | DVD Audio | Yes |
| | Number of Channels on Line-Out | Stereo (Left & Right channels) |

| | | |
|---|---|---|
| | Internal Audio Speaker Power Rating | 1.5 W |
| | Internal Speaker | Yes |
| | Hardware Equalizer for Internal Speaker | No |
| | External Speaker Jack (Line-Out) | Yes |

| | | |
|---|---|---|
| SoundBlaster (Creative Labs) X-Fi Titanium PCIe Audio Card | 24-bit Analog-to-Digital conversion of analog inputs | 96kHz sample rate |
| | 24-bit Digital-to-Analog conversion of digital sources | 96kHz to analog 7:1 speaker output |
| | 24-bit Digital-to-Analog conversion of stereo digital sources | 8, 11.025, 16, 22.05, 24, 32, 44.1, 48 and 96kHz |
| | 16-bit to 24-bit recording sampling rates | 16-bit/44.1kHz, 16-bit/48kHz, 24-bit/44.1kHz, 24-bit/48kHz and 24-bit/96kHz with direct monitoring |
| | Enhanced SoundFont support | Up to 24-bit resolution |
| | Signal-to-Noise Ratio (2okHz Low-pass filter, A-Weighted) | 109dB |
| | Total Harmonic Distortion + Noise at 1kHz (20kHz Low-pass filter) | .004% |
| | Frequency Response (-3dB, 24-bit/96kHz input) | 10Hz to 46kHz |
| | Frequency Response (-3dB, 24-bit/192kHz input) | 10Hz to 46kHz |
| | Speaker and Headphone connections | Stereo to 7.1 (Line Out via three 3.5mm mini jacks) |
| | Flexijack | Line In/ Microphone In/Optical Out via shared 3.5mm mini jack |
| | Front Panel Header | Intel HD Audio Compatible (2x5 pin) |
| | Operating System | Microsoft Windows Vista Business 64<br>Microsoft Windows Vista Business 32<br>Microsoft® Windows® XP Professional SP2<br>Microsoft Windows XP Professional x64 Edition |
| | Minimum System Requirements | System RAM: 512MB<br>Operating System: Windows Vista 32-bit and 64-bit version or Windows XP 32-bit or 64-bit version |

*Technical Specifications - Optical and Removable Storage*

| | | | |
|---|---|---|---|
| HP DVD-ROM Drive | Description | | 5.25-inch, half-height, tray-load |
| | Mounting Orientation | | Either horizontal or vertical |
| | Interface Type | | SATA/ATAPI |
| | Dimensions (WxHxD) | | 15.0 x 4.4 x 20.3 cm (5.9 x 1.7 x 8.0 in) |
| | Disc Capacity | DVD-ROM | Single layer: Up to 4.7 GB Double layer: Up to 8.5 GB |
| | Access Times | DVD-ROM Single Layer | < 140 ms (typical) |
| | | CD-ROM Mode 1 | < 125 ms (typical) |
| | | Full Stroke DVD | < 250 ms (seek) |
| | | Full Stroke CD | < 210 ms (seek) |
| | Power | Source | SATA DC power receptacle |
| | | DC Power Requirements | 5 VDC ± 5%-100 mV ripple p-p<br>12 VDC ± 5%-200 mV ripple p-p |
| | | DC Current | 5 VDC - <1000 mA typical, < 1600 mA maximum<br>12 VDC - < 600 mA typical, < 1400 mA maximum |
| | Operating Environmental (all conditions non-condensing) | Temperature | 5° to 50° C (41° to 122° F) |
| | | Relative Humidity | 10% to 90% |
| | | Maximum Wet Bulb Temperature | 30° C (86° F) |
| | | Operating Systems Supported | Windows Vista Business 64*, Windows Vista Business 32*, Windows Vista Home Basic 32*, Windows 2000, Windows XP Professional or Windows XP Home 32*.<br>Red Hat Enterprise Linux(RHEL) WS4**, 5 Desktop/Workstation<br>Novell SLED 10 & SLED 11<br>No driver is required for this device. Native support is provided by the operating system. |

* Certain Windows Vista product features require advanced or additional hardware. See http://www.microsoft.com/windowsvista/getready/hardwarereqs.mspx and http://www.microsoft.com/windowsvista/getready/capable.mspx for details. Windows Vista Upgrade Advisor can help you determine which features of Windows Vista will run on your computer. To download the tool, visit: http://www.windowsvista.com/upgradeadvisor. For Windows Vista system requirements, visit: http://www.windowsvista.com/systemrequirements.

** RHEL WS4 not supported on Z200/Z200SFF

*Technical Specifications - Optical and Removable Storage*

| | | | | |
|---|---|---|---|---|
| HP DVD+/-RW Drive | Description | 5.25-inch, half-height, tray-load | | |
| | Mounting Orientation | Either horizontal or vertical | | |
| | Interface Type | SATA/ATAPI | | |
| | Dimensions (WxHxD) | 15.0 x 4.4 x 20.3 cm (5.9 x 1.7 x 8.0 in) | | |
| | Disc Formats | DVD-RAM<br>DVD+R<br>DVD+RW<br>DVD+R DL<br>DVD-R DL<br>DVD-R<br>DVD-RW<br>CD-R<br>CD-RW | | |
| | Disc Capacity | DVD-ROM | 8.5 GB DL or 4.7 GB standard | |
| | | Full Stroke DVD | < 250 ms (seek) | |
| | | Full Stroke CD | < 210 ms (seek) | |
| | Maximum Data Transfer Rates | CD ROM Read | CD-ROM, CD-R Up to 40X<br>CD-RW Up to 32X | |
| | | DVD ROM Read | DVD-RAM | Up to 12X |
| | | | DVD+RW | Up to 8X |
| | | | DVD-RW | Up to 8X |
| | | | DVD+R DL | Up to 8X |
| | | | DVD-R DL | Up to 8X |
| | | | DVD-ROM | Up to 16X |
| | | | DVD-ROM DL | Up to 8X |
| | | | DVD+R | Up to 16X |
| | | | DVD-R | Up to 16X |
| | Power | Source | SATA DC power receptacle | |
| | | DC Power Requirements | 5 VDC ± 5%-100 mV ripple p-p<br>12 VDC ± 5%-200 mV ripple p-p | |
| | | DC Current | 5 VDC -1000 mA typical, 1600 mA maximum<br>12 VDC -600 mA typical, 1400 mA maximum | |
| | Operating Environmental (all conditions non-condensing) | Temperature | 5° to 50° C (41° to 122° F) | |
| | | Relative Humidity | 10% to 90% | |
| | | Maximum Wet Bulb Temperature | 30° C (86° F) | |
| | | Operating Systems Supported | Windows Vista Business 64*, Windows Vista Business 32*, Windows Vista Home Basic 32*, Windows 2000, Windows XP Professional or Windows XP Home 32*.<br>Red Hat Enterprise Linux (RHEL) WS4**, 5 Desktop/Workstation<br>Novell SLED 10 & SLED 11<br><br>No driver is required for this device. Native support is provided by the operating system. | |

*Certain Windows Vista product features require advanced or additional hardware. See http://microsoft.com/windowsvista/getready/hardwarereqs.mspx and http://www.microsoft.com/windowsvista/getready/capable.mspx for details. Windows Vista Upgrade Advisor can help you determine which features of Windows Vista will run on your computer. To download the tool, visit: http://www.windowsvista.com/upgradeadvisor. For Windows Vista system requirements, visit: http://www.windowsvista.com/systemrequirements

* LightScribe functionality is not natively supported by Linux distributions. Customers may download LightScribe Linux drivers from: http://www.lightscribe.com/downloadSection/linux/index.aspx

** RHEL WS4 not supported on Z200/Z200SFF

| | | |
|---|---|---|
| | Kit Contents | HP SATA SuperMulti LightScribe DVD Writer drive, LightScribe software, Roxio Easy Media Creator software, Intervideo WinDVD Software, installation guide, and DVD+R media. |

| | | |
|---|---|---|
| HP 22-in-1 Media Card Reader | Description | The Media Card Reader device uses the same physical form factor and mounting as a Floppy Disk Drive. The device connects to a 2x5 two-channel USB header on the motherboard of the system. There is no USB controller card provided. Please see the Disc Formats section below for a list of flash memory card formats that are supported. |
| | Mounting Orientation | The Media Card Reader can be mounted in a dedicated Floppy Drive bay (if the chassis provides one) or in an appropriate Optical Bay adapter. It will operate in any orientation. |
| | Interface Type | USB 2.0 (one channel dedicated to the separate USB port; one channel dedicated to the flash memory card slots) |
| | Dimensions (WxHxD) | 124.5 x 101.6 x 25.4 mm (4.9 x 4.0 x 1.0 in) |
| | Disc Formats | xD-Picture<br>Micro SD<br>Micro SDHC<br>SD<br>SDHC<br>Mini SD<br>Mini SDHC<br>MultiMediaCard (MMC)<br>Reduced Size MultiMediaCard (RS MMC)<br>MultiMedia Card 4.2 (MMC Plus, including MMC Plus HC)<br>Reduced Size MultiMedia Card 4.2 (MMC Mobile, including MMC Mobile HC)<br>CompactFlash Card Type I |

| | | | |
|---|---|---|---|
| | | CompactFlash Card Type II<br>MicroDrive<br>Memory Stick (MS)<br>MagicGate Memory Stick (MG)<br>MagicGate Memory Stick Duo<br>Memory Stick Select<br>Memory Stick Duo (MS Duo)<br>Memory Stick PRO (MS PRO)<br>Memory Stick PRO Duo (MS PRO Duo)<br>Memory Stick PRO-HG Duo<br><br>Two additional formats are usable with adapters (not supplied):<br>MMC Micro<br>Memory Stick Micro (M2) | |
| HP Blu-Ray Writer | Description | 5.25-inch, half-height, tray-load | |
| | Mounting Orientation | Either horizontal or vertical | |
| | Interface Type | SATA | |
| | Dimensions (WxHxD) | 15.0 x 4.4 x 20.3 cm (5.9 x 1.7 x 8.0 in) | |
| | Disc Formats | BD-ROM<br>BD-R<br>BD-RE<br>DVD-RAM<br>DVD+R<br>DVD+RW<br>DVD+R DL<br>DVD-R DL<br>DVD-R<br>DVD-RW<br>CD-R<br>CD-RW | |
| | Disc Capacity | DVD-ROM | 8.5 GB DL or 4.7 GB standard |
| | | Blu-ray | 50 GB DL or 25 GB standard |
| | | Full Stroke DVD | < 250 ms (seek) |
| | | Full Stroke CD | < 210 ms (seek) |
| | | Blu-ray | Blu-ray |
| | | Startup Time (Time to drive ready from tray loading) | BD-ROM (SL/DL) 25S / 28S<br>BD-R (SL/DL) 25S / 28S<br>BD-RE (SL/DL) 25S / 28S<br>DVD-ROM (SL/DL) 18S / 18S<br>DVD-R (SL/DL) 25S / 25S<br>DVD-RW 25S<br>DVD+R (SL/DL) 25S / 25S<br>DVD+RW 25S<br>DVD-RAM 45S<br>CD-ROM 45S |

*Technical Specifications - Optical and Removable Storage*

| | | | |
|---|---|---|---|
| Maximum Data Transfer Rates | CD ROM Read | CD-ROM | Up to 40X |
| | | CD-R | Up to 40X |
| | | CD-RW | Up to 40X |
| | DVD ROM Read | DVD-RAM | Up to 5X |
| | | DVD+RW | Up to 10X |
| | | DVD-RW | Up to 10X |
| | | DVD+R DL | Up to 8X |
| | | DVD-R DL | Up to 8X |
| | | DVD-ROM | Up to 16X |
| | | DVD-ROM DL | Up to 8X |
| | | DVD+R | Up to 12X |
| | | DVD-R | Up to 12X |
| | Blu-Ray | BD-ROM | Up to 6X |
| | | BD-ROM DL | Up to 4.8X |
| | | BD-R | Up to 6X |
| | | BD-R DL | Up to 4.8X |
| | | BD-R | Up to 6X |
| | | BD-RE SL/DL | Up to 4.8X |
| Power | Source | SATA DC power receptacle | |
| | DC Power Requirements | 5 VDC ± 5%-100 mV ripple p-p<br>12 VDC ± 10%-100 mV ripple p-p | |
| | DC Current | 5 VDC -900 mA typical, 1200 mA maximum<br>12 VDC -1000 mA typical, 1600 mA maximum | |
| Operating Environmental (all conditions non-condensing) | Temperature | 5° to 50° C (41° to 122° F) | |
| | Relative Humidity | 15% to 80% | |
| | Maximum Wet Bulb Temperature | 30° C (86° F) | |
| | Operating Systems Supported | Windows Vista Business 64*, Windows Vista Business 32*, Windows Vista Home Basic 32*, Windows 2000, Windows XP Professional or Windows XP Home 32*.<br>Red Hat Enterprise Linux (RHEL) WS4**, 5 Desktop/Workstation<br>Novell SLED 10 & SLED 11<br><br>* No driver is required for this device. Native support is provided by the operating system.<br><br>** RHEL WS4 not supported on Z200/Z200SFF | |
| | Kit Contents | HP Blue Laser RW Drive, LightScribe software, Roxio Easy Media Creator software, Intervideo WinDVD Software, installation guide. | |

| | |
|---|---|
| Disclaimer | As Blu-Ray is a new format containing new technologies, certain disc, digital connection, compatibility and/or performance issues may arise, and do not constitute defects in the product. Flawless playback on all systems is not guaranteed. In order for some Blu-Ray titles to play, they may require a DVI or HDMI digital connection and your display may require HDCP support. HD-DVD movies cannot be played on this workstation. |

| | | |
|---|---|---|
| HP FireWire/IEEE 1394a PCI Card | Data Transfer Rate | Burst Data Rate up to 400 Mbps |
| | Device Interface Protocol | IEEE-1394a |
| | Devices Supported | IEEE-1394 compliant devices |
| | Bus Type | PCI card with brackets for low profile and full height PCI slots. |
| | Certification Level | FCC Part 15B, cULus 60950, CE Mark EN55022B(1995)/EN55024-1998 STD, Taiwan BSMI CNS13438, Korea MIC |
| | Ports | Two IEEE 1394 6-Pin Connector (Rear) |
| | Internal Connectors | One 10-Pin (9 Contacts) Custom Connector |
| | System Requirements | Windows Vista Business 64*, Windows Vista Business 32*, Windows Vista Home Basic 32*, Windows 2000, Windows XP Professional or Windows XP Home 32*. No driver is required for this device. Native support is provided by the operating system.<br><br>* Certain Windows Vista product features require advanced or additional hardware. Windows Vista Upgrade Advisor can help you determine which features of Windows Vista will run on your computer. To download the tool, visit: http://www.windowsvista.com/upgradeadvisor. For Windows Vista system requirements, visit: http://www.windowsvista.com/systemrequirements.<br><br>Pentium II 266 or above<br>128-MB RAM<br>1-GB Hard Drive<br>CD-ROM drive<br>Built-in sound system<br>Available PCI slot |
| | Temperature - Operating | 50° to 131° F (10° to 55° C) |
| | Temperature - Storage | -22° to 140° F (-30° to 60° C) |
| | Relative Humidity - Operating | 20% to 80% |
| | Operating Systems Supported | Windows Vista Business 64*, Windows Vista Business 32*, Windows Vista Home Basic 32*, Windows 2000, Windows XP Professional or Windows XP Home 32*<br><br>* Certain Windows Vista product features require advanced or additional hardware. Windows Vista Upgrade Advisor can help you determine which features of Windows Vista will run on your computer. To download the tool, visit: http://www.windowsvista.com/upgradeadvisor. For Windows Vista system requirements, visit: http://www.windowsvista.com/systemrequirements. |

| | | |
|---|---|---|
| Broadcom (5761) NetXtreme Gigabit Ethernet Plus NIC | Connector | RJ-45 |
| | Controller | Broadcom 5761 PCI-Express LAN Controller |
| | Memory | 8 MB NVRAM serial Flash |
| | Data Rates Supported | 10/100/1000 Mbps |
| | Compliance | IEEE 802.1P, 802.1Q, 802.2, 802.3, 802.3AB, 802.3u, and 802.3x |
| | Bus Architecture | PCI-Express |
| | Data Path Width | Single Channel PCI-Express |
| | Data Transfer Mode | Bus Master DMA |
| | Hardware Certifications | FCC class B, Canada and US NRTL Mark, C-Tick for Australia, BSMI for Taiwan, VCCI for Japan, MIC for Korea, GOST for Russia, UL listed (E212044), European Union Notice (CE 0682) |
| | Power Requirement | 1.8W @ 3.3V |
| | Boot ROM Support | Yes |
| | Network Transfer Mode | Full-duplex<br>Half-duplex (not available for the 1000BASE-T transceiver) |
| | Network Transfer Rate | 10BASE-T (half-duplex) 10 Mbps<br>10BASE-T (full-duplex) 20 Mbps<br>100BASE-TX (half-duplex) 100 Mbps<br>100BASE-TX (full-duplex) 200 Mbps<br>1000BASE-T (full-duplex) 2000 Mbps |
| | Operating Temperature | 32° to 131°F (0° to 55° C) |
| | Operating Humidity | 131° F (55° C) with 5% to 95% non-condensing humidity |
| | Dimensions | 7 cm x 10.5 cm (2.75 in x 4.13 in), low profile compatible |
| | Operating System Driver Support | Windows Vista 32-bit SP1, Windows Vista x64 SP1, Windows XP 32 bit professional, Windows XP x64<br>Red Hat Enterprise Linux (RHEL) WS4*, 5 Desktop/Workstation<br>Novell SLED 10 & 11<br><br>*RHEL WS4 not supported on Z200/Z200SFF |
| | Management Capabilities | ACPI, WOL and DMI 2.0, PXE 2.0, WfM 2.0, Broadcom mgmt utility, ASF2.0, DASH 1.0 and DASH 1.1 profiles |
| | Kit Contents | Broadcom NetXtreme Gigabit Ethernet Plus NIC, Broadcom NetXtreme Gigabit Ethernet Plus NIC USB Cable Assembly, CD, drivers, quick install guide, product warranty statement |

*Technical Specifications - Networking and Communications*

| | | |
|---|---|---|
| Intel Gigabit CT Desktop NIC | Connector | RJ-45 |
| | Controller | Intel WG82574L Gigabit Ethernet Controller |
| | Memory | Integrated Dual 48K configurable transmit receive FIFO Buffers |
| | Data Rates Supported | 10/100/1000 Mbps |
| | Compliance | IEEE 802.1P, 802,1Q, 802.2, 802.3, 802.3AB and 802.3u compliant, 802.3x flow control |
| | Bus Architecture | PCI-E 1.0a |
| | Data Path Width | X1, 250 MB/s, Bi-directional interface |
| | Data Transfer Mode | Bus-master DMA |
| | Hardware Certifications | FCC, B, CE, TUV- cTUVus Mark Canada and United States, TUV- GS Mark for European Union |
| | Power Requirement | Aux 3.3V, 3.0 Watts in 1000base-T and 2.0 Watts in 100Base-T |
| | Boot ROM Support | Yes |
| | Network Transfer Rate | 10BASE-T (half-duplex) 10 Mbps<br>10BASE-T (full-duplex) 20 Mbps<br>100BASE-TX (half-duplex) 100 Mbps<br>100BASE-TX (full-duplex) 200 Mbps<br>1000BASE-T (full-duplex) 2000 Mbps |
| | Operating Temperature | 32° to 131°F (0° to 55° C) |
| | Operating Humidity | 85% at 131° F (55° C) |
| | Dimensions | 12.1 x 5.7 x 2.0 cm (4.75 x 2.25 x 0.8 in) |
| | Operating System Driver Support | Windows Vista Business 64, Windows Vista Business 32, Windows XP Professional, Windows XP x64.<br>Red Hat Enterprise Linux 4 (RHEL4.8 or newer)*, Red Hat Enterprise Linux 5 (RHEL5.3 or newer).<br>* RHEL WS4 not supported on Z200/Z200SFF |
| | Management Capabilities | WOL , PXE, DMI, WFM 2.0 |
| | Kit Contents | Intel Gigabit CT Desktop NIC, low profile bracket, CD containing Intel PROset II NIC drivers, quick install guide, product warranty statement |

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